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PSYCHIATRY AND THE STATE.*

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A year ago, when inducted into office as President of this Association, I expressed my appreciation of the high honor conferred upon me. It is a distinguished privilege to preside over the deliberations of the oldest national medical organization in the country. It is a privilege to cherish and for which I am grateful. But to maintain the noble traditions of the office is no easy task.

Throughout its long and honorable career, this Association has ever sought to promote the highest standards of care and treatment of persons suffering from mental disease. Leading the advance in psychiatric thought and method in this country and Canada, it has constantly and steadfastly maintained the highest ideals. Its traditions, based upon the idea of service, are still fostered. It is still seeking, as it has always sought, to serve most effectively the mentally disabled individual and at the same time to render the largest possible measure of public service.

As modern investigation has revealed the ever-widening range of psychiatric interests, it has become evident that psychiatry, more than any other medical specialty, has fundamental social significance. This Association in recent years has properly directed increasing attention to the social aspects of mental disease and defect, the menace to society resulting therefrom and the need of more effective efforts to combat the social dangers involved, still all too little appreciated by those unfamiliar with the situation.

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As one who may be termed an "administrative psychiatrist," and as one concerned with a state-wide situation respecting mental disabilities, I have been impressed with the fact that if definite progress is to be made in effective application of psychiatric knowledge, there must be increased cooperation and coordination of effort between those engaged in the different phases of psychiatric work—between the psychiatrist primarily interested in the treatment of social ills and the psychiatrist primarily interested in the treatment of the individual. That implies closer contact between voluntary and state agencies. The development of so-called social psychiatry is relatively recent, and hence, for the most part, is now carried on by private, unofficial agencies; whereas official state agencies and those representing lesser political units are primarily concerned with the care and treatment of definitely psychotic patients. All, however, are engaged in attack upon the same huge problem of mental disease in which the state as representing all the people of the community has a paramount interest. It is most directly concerned in seeking the establishment of coordinated effort to the end of securing increased therapeutic results. Hence, in casting about for a topic to discuss on this occasion, my thoughts centered upon the subject, "Psychiatry and the State."

I shall first attempt to indicate the existing situation respecting mental disease, the fundamental necessity for state effort in dealing with it, the manner in which state effort has heretofore been exerted, the expense entailed thereby, the outlook for the future, with suggestions as to more effective procedure.

Remarkable advance has been made in the promotion of physical health, infant mortality has been largely reduced, and infectious diseases are constantly being controlled to an ever greater degree. Through these and other health measures, approximately 15 years have been added to the average duration of human life since 1890, it now being somewhat over 55 years. But mere increased length of life is of little avail, unless it be well-ordered, socially adjusted, normal life. Too often public health efforts are deemed successful on a quantitative rather than a qualitative basis. The statistics of mental disease clearly indicate that, in part at least, the increase of mental disease is due to the prolongation of life in unstable individuals, who failing to succumb physically now live long enough to succumb mentally. But mere physical existence is of no value except as mental health co-exists.

There are today unprecedented demands upon human powers of adjustment. The tremendous strides made by physical science with resulting mechanical invention calls for adjusting capacity still unattained by many individuals. It is not surprising that there is social unrest and that unhealthy social phenomena are prevalent. Emotions are artificially stimulated, conduct is largely determined by feelings, while at the same time it is ever more difficult for many persons to secure the satisfactions they crave under the urge of their biological strivings.

An industrial age tends to minimize the importance of the individual in the mass. Factory conditions limit and conceal personal achievement and the fundamental needs of human nature are often ignored.

Modern society with its changing and ever new social conditions is becoming increasingly complex; there is constant enactment of new laws, which tend to render social adjustment more difficult, while, despite the unprecedented triumphs of physical science, its methods and conclusions are still subject to attack, even by legislative bodies.

It is now possible to determine with considerable accuracy the incidence of mental disease in this country and to make comparisons with former years. In cooperation with a joint committee representing this Association and the National Committee for Mental Hygiene, the United States Census Bureau took a special census of patients in mental hospitals as of January 1, 1923. The exhaustive report of the census recently made public is worthy of the careful study of every person interested in the subject, covering, as it does, a wider scope and setting forth more detailed information concerning mental disease than any previous census report in this field.

The report shows that mental patients in hospitals numbered approximately 270,000 on January 1, 1923, constituting a rate of 245 to 100,000 of the population. Comparing such rate with the rate of 204 per 100,000 in 1910 and 170 per 100,000 in 1890, it is evident that the rate of increase of known cases of severe mental disease has constantly grown during recent years.

The actual number of mental patients in hospitals increased 25.1 per cent between 1904 and 1910 and 42.5 per cent between 1910 and 1923. This explains in some measure the fact that no

state has as yet been able to provide adequate facilities for their care. As modern facilities have increased, the number of known insane has increased still faster. However, in all parts of the country there has been a constant parallelism between improved and increased facilities and the number of cases seeking treatment. It thus seems a fair deduction that the increase of known psychotic patients is in part at least due to increased confidence on the part of the public in public institutions—that a certain number of mental cases are not revealed in public records, when public institutions render inadequate service. Nevertheless, the rate of increase appears greater than can be explained on the basis of increased and better facilities with resulting increase of public confidence in hospitals. After giving due weight to such factor, to the increased recognition of mental disease, to increase of duration of average human life and to the proportional increase due to increased population, there still remains an increase of psychotic patients which undoubtedly represents an increased incidence of severe mental disease. The present situation is graphically revealed by certain data prepared by Dr. Horatio M. Pollock, Statistician, New York State Hospital Commission, who has shown that in the State of New York, during a single generation, one person in 25 has a state hospital residence, while, during the same period, one family in seven has a representative in a state hospital. While such a condition may not obtain in all states, there is no reason to doubt that it is indicative of conditions in many states, particularly the more populous ones.

Perhaps the period of time during which accurate statistics regarding the greater part of the country have been available is still too short to justify a definite conclusion respecting actually increased incidence, but at all events, with approximately 75,000 first admissions a year to the mental hospitals of the country, it is evident that no agencies short of state agencies possess sufficient resources to successfully cope with the situation.

The fundamental necessity for the state to take the initiative in dealing with mental disease is also revealed by the history of failure attending the care of the so-called insane in every state, in which lesser political units have attempted the task.

State care has been naturally evolved as the only practical type of public care which can provide the best modern treatment.

However, we all appreciate the fact that state care still possesses manifest shortcomings, despite which it is immeasurably superior to any other type of public care which has preceded it. These states which provide complete state care for all patients requiring treatment in a public hospital are without exception the states in which the best care and most effective treatment are available.

The boundaries of psychiatric interests have so widely extended during recent years that there is danger insufficient attention will be given to the basic structure upon which after all depends the proper care and treatment of the vast majority of mental patients.

State psychiatric organization may be compared to the structural steel framework of a sky scraper. The completed edifice gives no hint of the enormous amount of fabricated steel behind the stone or granite exterior. Nevertheless, the building could not be erected without the strength and stability provided by the hidden steel. Just so, governmental organization for psychiatric work provides the stable, enduring framework upon which extensions and refinements of psychiatric activities may be built. Foundations must be firm if superstructures are to endure. However, like the hidden steel of the sky scraper, governmental administrative machinery should be little in evidence, functioning only to render service on the broadest possible basis. The means must never obscure the end.

It is but logical for the state to assume the entire responsibility for the treatment of psychotic patients, inasmuch as hospital treatment in many instances implies deprivation of liberty with consequent necessity for legal procedure based upon statutes of statewide application.

While marked advance has been made in some states in rendering less burdensome legal provisions respecting the care of the legally insane, there are still wide sections of the country in which archaic legal concepts persist to the detriment of psychiatric interests. Legalistic conceptions still hamper psychiatric effort to the detriment of the individual mental sufferer.

There is a great lack of statutory uniformity in the different states respecting mental patients, as is of course the case respecting many other matters. In an effort to render the experience of one state readily available to another and thus to promote increased uniformity in state legislation, State Senator Toll, of Colorado, has

recently succeeded in organizing the Legislators Association, with every state legislative body represented in its membership. Advisory committees of recognized authorities have been appointed, representing all the major fields of state legislation, including mental hygiene and eugenics. A mechanism is thus provided, which should prove of great value in promoting sound legislation respecting psychiatric matters.

The type and effectiveness of treatment which may be obtained in public institutions for mental patients are still largely determined by geographical location. Patients in one part of the country may reasonably expect to receive the benefit of all that modern psychiatric knowledge has to offer, while in other parts of the country, perhaps equally or even more desirable as places of residence when judged by ordinary living conditions and in which efforts are made to preserve physical health, a mental patient can expect to receive only the most crude and ofttimes inhumane type of custodial care. If the public can ever be made to realize the essential injustice of the present situation whereby mere accident of residence may determine the issue as between recovery or failure to recover from a mental disorder, it is certain that conditions will be rectified regardless of financial considerations.

Logical and desirable as is the development of complete state care, it has even yet been attained in but relatively few states. The National Committee for Mental Hygiene reports that approximately thirty states maintain their indigent insane at state expense, but in most of such states the law allows mental patients to be cared for also in county institutions, and even in some states with supposed state care, alms-house care co-exists. Furthermore, in some states maintaining state hospitals, maintenance of certain groups of patients is paid by towns, counties or municipalities, while in others the state pays but a part of the maintenance, dividing the expense with the lesser political units of the state. The inevitable result is that local authorities often refrain from committing persons because of the expense involved, again no thought being given to the social damage resulting from a lost opportunity to restore a mentally deranged person.

However, the outlook is bright despite the conditions mentioned. Man, himself, is being studied as never before. There is an increasing number of scientific workers interested in the study

of human conduct, of the motives and impulses actuating it and of human relationships generally.

While perhaps progress appears slow and halting in view of the many unsolved problems with which we are confronted, yet after all modern psychiatry is still in its early youth. At least the various problems respecting mental disease are being defined and formulated as never before, and of course the formulation of a problem is the first step toward solution. Intellect was never more productive. The fact that material science has won tremendous victories gives hope of similar triumphs in the field of human behavior. There is no room for pessimism. Psychiatry drawing upon both material and social sciences has made greater progress in the last twenty-five years than during preceding centuries. The therapeutic results of the malarial treatment of paresis are alone sufficient to hearten the psychiatrist. Even if it be eventually found that actual recovery is still impossible, the fact remains that the absolutely bad prognosis respecting duration of life is no longer justified in approximately 30 per cent of cases treated. Mental disorders can be and are being controlled in an increasing degree in the individual, especially in the developmental period.

The outlook is likewise hopeful as respects the control of asocial and antisocial conduct through the application of psychiatric method. The factor of abnormal and undesirable behavior enters all social questions. Interpreting undesirable and abnormal conduct in terms of objectives sought, psychiatry provides a more hopeful approach to social problems than was ever before possible.

Research in the physical sciences finds greater popular support today than ever before. The National Academy of Science is seeking a fund of at least twenty million dollars for the extension of pure scientific investigation covering a period of at least ten years. Numerous large corporations expend large sums for the maintenance of research bureaus in connection with their commercial activities. One nationally known corporation is said to find the annual expenditure for research of approximately ten million dollars justified by the results obtained. Even in respect to the mooted question of prohibition success or failure, a scientific inquiry is being instituted under the auspices of the National Research Council of Social Sciences. Research is no less the hope of psychiatry and the allied sciences concerned with human conduct.

From the standpoint of psychiatry one of the most hopeful research projects is that proposed in Chicago, whereby a fund of $275,000 is to be provided for a five-year program for the scientific study of human behavior, which project is the outgrowth of previous research activities of the Institute for Juvenile Research, under Dr. Herman M. Adler. It demonstrates anew that genuine research stimulates further research.

State financial resources could be utilized to no better purpose than for more adequate psychiatric research, but it is difficult to convince the average legislator that a negative finding may be as valuable as a positive one. Furthermore, as the practical application of scientific data cannot be expected to always follow close upon its determination, state financial authorities are prone to think that the advantages to be gained are too uncertain and remote to justify required expenditure. Hence, dependence must still be largely placed upon private agencies for financial support for psychiatric research work. No philanthropic endeavor would eventually yield more in the cause of human advancement.

There is almost always a delay between the acquisition of knowledge and its practical application. As was recently pointed out by that Nestor of the public health movement, Dr. William H. Welch, with respect to general medicine, there is usually a long period of time between a medical discovery and its practical application for the relief of disease. Psychiatry is no exception. But with a constantly increasing store of facts, greater practical application must eventually follow. However, there is perhaps greater present need for the exercise of critical judgment in psychiatry than ever before. The very fact that psychiatric effort may be effectively applied in dealing with social problems has resulted in the appearance of numerous lay-workers and pseudo-psychiatrists, who with assumed psychiatric authority are prone to endorse unsound and ill-advised modes of procedure. It is necessary to protect psychiatry from its over-enthusiastic friends and to insist upon adherence to scientific method. Even, if not a material science, psychiatry deals with concrete issues and must hold a high reverence for proven fact and tested experience. The application of exact knowledge is no less necessary because we deal with the more or less intangible factors involved in mental activity but rather is it on such account the more necessary. The words of

Huxley apply: "There is no remedy for the ills of mankind without absolute veracity of thought and action. The resolute facing of the world as it is with all the garments of make-believe shorn off."

It is not always easy to even determine what facts are, especially in the realm of psychology and psychiatry. The personality of the observer always enters into the equation, and even psychiatrists share the common tendency to see things as desired. "Wishful thinking" is more readily recognized in others than discarded in one's own thinking, but upon the steadfast pursuit of truth depends further psychiatric progress.

As the public is becoming more familiar with state hospitals and their extended functions, there is increasing appreciation of the fact that gross appropriations made for their support are no necessary index to either economy or lack of economy in their administration. The public properly insists upon genuine economy, and genuine economy is only secured when hospitals serve their designed purpose with maximum efficiency as expressed in terms of patients restored to society. No appropriations are excessive when necessary to achieve such end. As a rule, the public is willing to spend money if there is due return; and so, as far as public funds are expended for the mentally sick, it is incumbent upon state hospital officials to insure due return.

The experience of the State of New York in regard to the financial aspect of public psychiatric work is most encouraging. When the proposal of a fifty million dollar bond issue, primarily for state hospitals, was first advanced in 1923, considerable opposition immediately developed. However, an organized campaign of education proved that the public responds to concrete facts. The need of the bond issue was unmistakable in view of existing conditions. After the public had been informed of such conditions, the bond issue was approved by an overwhelming majority.

Again, last autumn, a second bond issue for all the various types of state institutions was approved by the people of New York. There will thus be rendered available for construction work the sum of ten million dollars a year for ten years, of which, it appears probable, approximately 25 per cent will be available for state hospitals and state schools for defectives. The amounts of money involved are large, but they are far from excessive when

the needs they are designed to meet are considered. The people of the State of New York are no more fond of taxation than are the people of any other state, but, like American citizens everywhere, they are ready to meet a public need when the need is made sufficiently plain.

Large as is the cost of merely maintaining state hospitals, it is unreasonable to expect that in most states at least annual appropriations will ever suffice to render possible a construction program of sufficient scope to meet the needs of the state as measured by modern standards. At all events, progress by means of annual appropriations is slow, uncertain and often interrupted by changing administrations, which means unnecessary expense inherent in the lack of a continuous policy in plans of procedure. It is, therefore, gratifying to note that the states of Pennsylvania, New Jersey, California and several other states are now considering bond issues to develop their state hospital systems.

With a record of continual failure in practically every state in the country with respect to the provision of adequate hospital plants for mental patients through annual appropriations, it would seem that no arguments against bond issues for hospital construction should prevail as long as need exists and a state has sound credit. As a matter of fact, there is no argument against such bond issues except only the oft repeated one that ultimate expenditures under a bond issue are increased through interest charges. It is again the ancient but persistent question of money or human welfare.

With the sound provision that all construction under a bond issue shall have a life at least equal to the life of the bonds, cost is so distributed that all those who bear any portion of it will have available the use of the facilities provided. With bonds issued only as the money can be economically used, the added financial burden is relatively light as far as the average tax-payer is concerned, while the cost of interest charges may be regarded as the price paid for having needs met promptly with untold benefit to the mental patients who thus receive modern care and treatment of which they would otherwise be deprived. Perhaps in no other way can the members of this Association do more to advance psychiatric interests than to advocate on every favorable occasion the issuance of state bonds for hospital construction so far as needs are unmet in the various states.

As evidence that legislative authorities are now more responsive to the need of increased and better public facilities for the mentally disabled, it may be noted that the 1922 special census, to which reference has been made, discloses the fact that the mental hospitals of the country increased in number from 366 in 1910 to 526 in 1922, including four psychopathic hospitals, an increase of 43 per cent. During the single year of 1922, over eleven million dollars were spent for permanent improvements, while maintenance cost in this year amounted to over sixty-three and a half million dollars. Such amounts have undoubtedly been increased each year since the special census was taken.

But enormous as is the direct cost of mental disease in this country, it pales into insignificance in comparison with the indirect cost resulting from the loss of productive capacity, implied by mental disorders. The special census of 1922 shows that but 4.8 per cent of first admissions to mental hospitals are under 20 years of age, but that the percentage of first admissions increases with each successive quinquennial age group until the largest percentage of first admissions occurs in the age group of 30 to 34 years. The average age of all first admissions is approximately 40 years, and it is thus evident that mental disease disables the individual when his social and economic value should reach its highest point. A thorough and detailed study of the economic loss occasioned by the different types of mental disease would undoubtedly reveal data of the utmost social importance.

State hospital officials are ever confronted with the necessity of seeking funds from the public treasury, which necessity is rarely appreciated in full measure by the financial authorities granting the funds. State hospital managements are often accused of extravagance, and the facts involved are disregarded and ignored, but facts are still effective instruments by which to gain desired ends. They cannot be effectively combated if properly used. Despite the burden of taxation of which we hear so much today and from which psychiatrists are no more exempt than other members of the community, public expenditures must increase in proportion to public needs.

After all, tax experts are not agreed that we are now overtaxed. I am at liberty to quote the Honorable John J. Merrill, New York State Tax Commissioner, to the effect that the public

today is not so much overtaxed as it is inequitably taxed. For instance, the total cost of state and local government in 1924 in the State of New York was approximately $669,000,000, approximately 80 per cent of which was levied upon about one-third of the total wealth of the state as estimated by the last federal census. It is the judgment of Tax Commissioner Merrill that with the present enormous increase of wealth in this country and with productive capacity increased, approximately 60 per cent within a single generation, an equitable and scientifically developed system of taxation would yield increased revenue, with greatly decreased financial burden upon the average individual who is primarily concerned, namely, the rent-payer, home-owner, farmer and owner of other real property.

The statement is often made that as federal taxes decrease, those of state and local governments increase. However, data published by the Committee on Public Relations of the Eastern Railroads show that the average cost of debt service now amounts to but 10 per cent of total state expenditures, as compared with 20 per cent of total expenditures for local governments and 40 per cent of total expenditures for the federal government. Furthermore, the federal government assumes but a relatively small financial burden on account of mental disease. The great cost of maintaining the alien insane is left for the states to assume without federal assistance, although of course the states had no voice in the admission of such aliens to the country. In New York State, for instance, the cost of the hospital care and treatment, housing and administration included in the maintenance of the 11,000 alien insane in the state hospitals, exceeds $5,000,000 a year; the state is also expending $7,000,000 a year for new hospital construction, rendered necessary by the presence of these patients. Other states suffer in proportion to the number of alien insane, for whom they are obliged to care. It is, therefore, not suprising that in the states of Massachusetts and New York, which make the largest expenditures on account of mental disease, such expenditures constitute from 12 per cent to 15 per cent of the total cost of state government.

Great as is the financial cost of extending and rendering more efficient public facilities dealing with mental disorders both in the community and in the hospitals, it is even more expensive not to

make required expenditures. Indirect cost is no less real because it is indirectly expressed. Relief from the financial burden resulting from mental disorders can only come through a lessened load of mental disease. The public must be taught to adopt one of the fundamental principles of mental hygiene and learn to fairly face the facts of the situation, taking action as indicated thereby.

Undoubtedly psychiatrists like all physicians are restrained by medical traditions and ethics from placing before the public the facts regarding their work, but proper publicity regarding psychiatric work can be attained without personal exploitation. Perhaps the most useful service rendered by the National Committee for Mental Hygiene, in its rôle of psychiatric pathfinder, has been the wide dissemination of facts relating to mental hygiene and methods of prevention of nervous and mental disorders. In an impersonal manner and with due regard to ethical considerations, it has accomplished untold good by informing the public of facts which vitally concern every individual. However, much remains to be done and every mental hospital and agency should seek and respond to all opportunities for the proper dissemination of psychiatric information, in which effort state officials should play a leading part.

Public facilities of any sort are only supplied in response to public demand. Psychiatrists will accomplish nothing by deploring unsatisfactory conditions, except only as the public is made familiar with the facts. Then and then alone, will there be a popular demand for the best in state psychiatric facilities to which legislative authority will be compelled to respond.

Psychiatrists are physicians whose first duty is to assist the afflicted. Therefore, they have nothing in common with those biological workers who, armed with pseudo-statistics, argue that present-day humanitarian effort hampers progress—that society tends to destroy itself by preserving the lives of unendowed, dependent and handicapped individuals—that what society needs is not so much amelioration as elimination of the so-called unfit. But as was recently pointed out by Mr. Homer Folks, of the New York State Charities Aid Association, the principles of hygienic living are not learned and applied by the underprivileged and handicapped element of society so much as they are utilized by the average normal person. It would, therefore, appear that a cessation of humani-

tarian effort would result in far more damage to the fit than to the unfit. The remorseless law of the survival of the fittest may have operated to the ultimate advantage of primitive man, but modern society could not survive if humanitarian effort were to cease, even if thereby there is increased survival of the unfit. Modern society is a huge organism, composed of infinite human units and human groups with divergent tendencies. The interests of the individual and of the group are constantly clashing with those of society. It is scarcely conceivable that ego-centric impulses would fail to dominate if there was no binding, coordinating influence of high emotional value. It is just such an influence which proceeds from humanitarian projects; acting as a social cement, it is a powerful factor in the prevention of social disruption.

The outlook for the future is not as dark as the materialistic biologist suggests. So far as mental disease is concerned, therapeutic possibilities were never brighter. More and more is it possible for the unfit of today to become the fit or the relatively fit of tomorrow. Standards of fitness vary and the unfit in one environment may become the fit in another environment to which adjustment is possible. Intellect is but one measure of social fitness. Defectives may have greater emotional stability than intellectual psychopaths. The very complexity of modern social organization means there is an infinite variety of social niches into which all sorts of varying capacities may fit, all of some social value.

While the psychiatrist considers the hereditary factor in abnormal mental reactions and has no quarrel with the eugenist, he must ever seek to render therapeutic effort effective, regardless of the type of human material with which he works.

The form of state psychiatric organization which functions most effectively depends in some measure upon local conditions. However, certain fundamental features long since determined by this Association are essential. Non-political professional administrative control is so obviously necessary as to merit no comment. However, in a democratic form of government, the entire elimination of partisan political influence in any state agency is difficult although possible. Despite the fact that civil service may not always function in a most desirable manner, yet whatever the difficulties occasioned by civil service, they are less than the difficulties under the spoils system. Civil service may hamper but it does protect

against political influence. Civil service with an actuarial sound pension system insures continuity and permanency of service to a greater extent than is secured by any other means yet suggested.

The idea still persists that the large business factor involved in the management of state hospitals or of state-wide hospital systems demands business control. It is assumed that the business side of hospital activity has but an incidental relationship to therapeutic results, whereas we all know business control as suggested seeks financial results irrespective of medical results with inevitable detriment to the latter. If the interests of patients are not to be sacrificed, all hospital activities must be administered with regard to efficiency of medical service, which, however, does not mean that good business methods cannot also be pursued. A trained administrative psychiatrist is far more capable of assimilating and adopting good business practice than is a business man capable of learning psychiatric needs and practice. Business control implies financial control, and financial control means entire control upon which all else depends. Psychiatric activities whether public or private cannot successfully function without psychiatric control.

The mental disease problem in most states is of such magnitude as to warrant the establishment of a separate department to deal with it. The name applied to a state department is of practical importance, conveying a suggestion to the public mind as to type of service rendered. While it is true state psychiatric organizations are still primarily concerned with the care and treatment of fully developed psychotic cases, yet, as means permit, increasing emphasis is being placed upon the state's preventive work. Hence, in the State of New York, at least, it has been deemed wise to provide for a Department of Mental Hygiene rather than a Department of Mental Disease. The State Health Departments deal with physical disease as well as with means to prevent its development, but their official designation properly suggests that the latter is the more important function. Just so the official title of Department of Mental Hygiene suggests prevention as of more importance than cure.

While the maintenance of mental clinics with associated psychiatric social service should be deemed an essential part of the work of a State Hospital System, yet mental clinic work is still in its

infancy. Even in states with the best mental clinic service, the technique of extra-mural psychiatric work is still in process of development. It implies, however, an extension of psychiatric interests to social situations out of which mental disease develops and the use of available social resources to secure social readjustment. The interests of so-called social psychiatry and of social service as such tend to merge, but it is just at this point that there is today a lack of coordinated effort. One of the things psychiatry should seek in the future is the integration of psychiatric work in the community, including not only that developed by official state agencies but that carried on by unofficial philanthropic groups which have been forced by the nature of problems encountered to enter the psychiatric field.

For practical reasons and because its interest is paramount, the state psychiatric organization should take the initiative in seeking such an integration. So far as this has been sought there has been ready response by most unofficial agencies to proffered assistance from the state. It has been found they are even eager to have the psychiatric assistance the state should be in a position to provide. Of course, local initiative should be preserved and stimulated which means the state should attempt no administrative control of private agencies, but voluntary cooperation induced by the state will vastly extend the scope and effectiveness of extra-mural activities.

The state mental clinic organization should also effect contact with the public health agencies of the community that also frequently encounter psychiatric problems even if not always recognized as such. The local health officers should be an integral part of what might be termed a psychiatric alliance. Especially in states in which health officers have been properly charged with the duty of providing adequate care for patients pending commitment, closer contact than now exists between the state and local officers is indicated with respect to the disposition of mental patients requiring public care and treatment.

Private practicing psychiatrists are still wanting in most communities, and for a long time to come their mere lack of numbers will render it impossible for them to be of material assistance in the prevention and treatment of mental disease. However, their cooperation as well as that of the general medical profession should be sought in developing all community psychiatric work. The

opposition sometimes manifested by medical men to state medical activities in carrying on public health work is rarely encountered in the field of mental medicine. Again, governmental assistance is usually welcomed. There is, however, an undeniable tendency to fear so-called state medicine on the part of many medical practitioners. Just what is implied by the term "state medicine" is uncertain, as rarely do two definitions agree. However, it appears to be usually used to indicate a real or fancied interference with private medical practice by state agencies. No such fear need be entertained with respect to mental medicine. Indeed, it is groundless with any sort of legitimate public health work as has been demonstrated anew in Cattaraugus County, N. Y., where the Milbank Health Demonstration has as one of its results, a greatly increased disposition on the part of the public to seek medical treatment in time of need. The general practitioners of Cattaraugus County have found their practices increased as a result of the stimulus of the health demonstration and just so private practicing psychiatrists will find their services in greater demand as a result of public psychiatric work. Indeed, psychiatric service is today needed to an extent probably unappreciated even by psychiatrists, inasmuch as it is only revealed as means are provided to meet it. For instance, there were during the last fiscal year over 16,000 visitors to the 48 mental clinics maintained by the New York State Hospital System, despite the fact that they function far short of maximum efficiency through lack of sufficient facilities and personnel. However, the fact that over one-third of the visitors had never had any hospital contact indicates in some degree the need of the service rendered.

The progress made in organized extra-mural preventive work appears marked when the relatively short time it has existed is considered. However, it is less impressive when theoretical possibilities are realized. In some states mental clinics and their psychiatric social service constitute important social agencies. In others they function on a lower level of efficiency or do not even exist. Hence, in many states dependence must be placed upon voluntary unofficial agencies for a long time to come to demonstrate the possibilities of mental clinic work. With demonstrations multiplied, it is inevitable state authorities will eventually

awaken to their duty in the matter, but there will ever be opportunity for state and private mental clinics to co-exist.

The state can do much to encourage the development of psychopathic or psychiatric hospitals in large communities and of psychopathic or psychiatric wards in general hospitals in smaller centers of population, both integral parts of a coordinated preventive system and the value of which is recognized by all psychiatrists. There is, however, no uniformity in the administrative control of such agencies. Psychopathic hospitals are maintained by the state and again by a lesser political unit. Psychopathic wards are found in general hospitals maintained by municipalities, counties and again by private organizations. There is also lack of uniformity in the manner in which both psychopathic hospitals and wards function. Some are primarily for relatively brief periods of observation, while others provide facilities for prolonged treatment. Some maintain research activities, and others do not. Some maintain an out-patient service and others do not. Some receive all types of mental patients, and others receive only selected cases. The mere designation " Psychopathic Hospital " or " Psychopathic Ward " gives no exact information as to type of service rendered. It may, therefore, be suggested that the discriminatory use of these and the designations " Psychiatric Hospital," " Psychiatric Ward " and " Psychiatric Institute " would assist in clarifying the situation. The etymology of the words " psychopathic " and " psychiatric " suggests a simple division of function between hospitals and wards with the respective names. " Psychopathic " from the root " patheia," meaning suffering, carries no implication of treatment or healing, while " psychiatric " from the root " iatreia," meaning healing, does carry such implication. It would, therefore, seem that the use of the word " psychopathic " should be used for hospitals and wards whose chief function is that of observation prior to commitment, and that the word " psychiatric " be applied to such hospitals and wards as provide more or less prolonged treatment. The word " psychiatric " would also seem applicable to a research institute, for psychiatric research is the foundation of successful treatment.

Limiting the words as suggested, it would appear that the establishment of psychopathic hospitals and wards is a local duty, whereas the state may properly provide psychiatric hospitals as

auxiliaries to the state hospital system for the intensive treatment of selected cases. As auxiliaries they should supplement but in no essential way duplicate the work of the state hospitals. No more unfortunate step could be taken than to establish psychiatric hospitals with the idea of thereby limiting the therapeutic function of the latter. The state hospital is the essential basic unit of any state psychiatric system, and it must continue to function on a strictly medical basis. However, existing public need of psychiatric service will not be fully met until psychiatric hospitals are established in connection with the medical colleges of the state for the two-fold purpose of reaching incipient mental cases that do not now reach state hospitals and to provide clinical facilities for the psychiatric education of medical students. The former purpose implies close coordination between the psychiatric hospital and the clinic service of the state system with which it should be intimately identified. The latter purpose looks to the future and the necessity of providing more adequate psychiatric instruction for the next medical generation. The justification for the establishment of state psychiatric hospitals in connection with medical schools which may or may not be state institutions rests upon the fact that it is the state which has the greatest possible interest in providing means whereby mental disease may be more successfully combated.

A state psychiatric organization may be highly satisfactory from a theoretical standpoint; it may be so designed as to make possible full use of unofficial agencies and of social resources, but it will still fail to render satisfactory service, lacking properly qualified personnel. Organization makes possible, but does not insure achievement. There is today an undeniable lack of trained psychiatric personnel. The state in its own interests should provide better means of psychiatric training. A system of psychiatric hospitals in connection with the medical educational centers of a state would attract the best type of medical personnel to the field of psychiatry.

However, it will be necessary for a considerable time in most states to depend upon unofficial agencies to provide such psychiatric educational facilities as may exist. Already the National Committee for Mental Hygiene, acting in its usual pioneer capacity, has through cooperation with the Rockefeller Foundation, been able to arrange for the establishment of a number of psychiatric scholar-

ships for which well-prepared applicants have been numerous. No demand based upon obvious need will long remain unsatisfied.

In states in which the magnitude of the mental disease problem justifies the establishment of a state psychiatric institute, such a unit should also be closely associated with a medical school and function in connection with a psychiatric hospital, that laboratory and clinical research be coordinated. Such an institute, serving as a unifying center of scientific and research activities for both the psychiatric and district state hospitals of the state, should provide special facilities for the training of medical and social service personnel for the entire system. By thus establishing a high standard of medical work, scientific work in all hospitals would be stimulated and enhanced in value. The better the quality of work performed by any agency of a state psychiatric system, the easier it is to raise the level of the work performed by all the agencies of the system.

The state may properly encourage and stimulate local initiative in the establishment of local psychopathic hospitals and wards for the temporary care of mental patients; but, as local agencies, they should be left under local administrative control, the state exercising only supervisory and advisory functions to insure the maintenance of proper standards. While local initiative may also find proper expression in the establishment of psychiatric wards in general hospitals for the treatment of psycho-neurotic and early psychotic cases, the establishment of psychiatric hospitals as auxiliaries to the state hospital system implies the necessity for their maintenance and administrative control by the state.

While no state has as yet been able to provide a state-wide system of psychiatric hospitals as a part of its psychiatric organization, it is surely evident that present day facilities must be supplemented and rendered more efficient if the menace of mental disease is to be successfully met. In addition to the psychotic cases requiring hospital treatment, there are perhaps four or five times as many individuals who suffer from definite mental deviations of less degree but, remaining in the community, are not subject to statistical enumeration. For the most part they today fail to receive adequate treatment despite the enormous social loss and damage they represent.

Treatment of the lesser types of mental disorders is largely expressed in terms of social readjustment, while that of definite psychotic types is more specifically medical in character. There is thus a divergent tendency in therapeutic procedure which is unfortunate. Again, there should be closer coordination of effort. No abnormal mental reaction of any type whatever can be properly evaluated except with the aid of complete mental and physical examination considered in connection with the social setting out of which the reaction develops. Omission of any part of technical procedure is an injustice to the patients and lessens therapeutic possibilities. It may, therefore, be suggested that no psychiatrist is properly equipped for community work without the clinical experience only to be obtained in a hospital for mental disease. Equally is it true that the hospital psychiatrist is ill-equipped for dealing with the incipient or lesser types of abnormal mental reactions in a community lacking special training in extra-mural work. While it is, of course, true that the same types of mental mechanisms are found in all human beings, there is a special technique of social readjustment which may only be acquired by special training.

After dealing with the more obvious psychiatric problems of the state, a Department of Mental Hygiene should be able to render service of great social value to a number of associated departments of the state government.

It is obvious that the state should utilize its psychiatric resources in the field of criminology, but Massachusetts is now the only state in the country which does so in a systematic way. That state has adopted a common-sense mode of procedure in its statutory provisions for the routine mental examination of certain groups of offenders, which is of course necessary to permit rational disposition of them. It is not too much to hope that in the future when definite psychopathic delinquents and defective delinquents are identified, they will be kept segregated as long as antisocial tendencies are manifest, and not as now kept confined for a fixed period of time more or less accidentally determined.

Certainly the prison system of the future will maintain a psychiatric service in the introduction and administration of which a mental hygiene department may well play a cooperative rôle. The facts already established regarding the psychopathology of crime clearly reveal the necessity for different types of institutional facilities for

the differentiated groups of offenders if any progress is to be made in corrective treatment. But the stimulus for improvement in present practice must proceed from the possessors of psychiatric information. In these days of crime commissions and public agitation concerning the increase of crime, the old revenge motive is still apparent in many proposed remedies providing for more severe punishment and harsher penalty. Ages-old instinctive drives ignore the teachings of experience. Again society and the state must depend upon psychiatry to point the way to a dispassionate scientific consideration of the situation that crime and the criminal may be considered in terms of cause and effect and that remedial measures may be formulated as definitely indicated by findings even now available.

The state has properly assumed supervision of the public school system, and financial school aid by the state is universally approved. However, it often seems that the state is more concerned with the quantity of education than with its quality. It is now thoroughly demonstrated that if education is to attain in greater measure its avowed object of training and fitting the individual for successful living, more attention must be given to the application of mental health principles in early life, when unhealthy ways of dealing with life's problems can be most readily corrected. With an entire cross-section of society under supervision in the public school system, it is tragic that the opportunity for effective mental hygiene service is not better utilized. In no way can a state psychiatric organization more effectively project its influence for good into the future than by seeking an alliance with the State Education Department to the end that psychiatric service may be available through the public school system. Many states maintain a medical inspection service for public schools through which it would be possible to at least identify psychopathic and unstable children, if medical school inspectors could be sufficiently interested in the matter to familiarize themselves to some extent at least with psychopathic conditions. Once identified, such children could be referred to the practicing psychiatrists when available or to a state or private mental clinic for corrective treatment.

While perhaps the assistance a State Mental Hygiene Department can render a State Education Department exceeds in social importance that which can be rendered other sister departments,

it is nevertheless apparent that its extra-mural work should also be articulated with the public health activities of the State Health Department, which is itself doing preventive psychiatric work so far as it functions in the field of social hygiene.

Recent investigations indicate that mental disease and defect are important factors in the incidence of dependency, a matter in which the state is again vitally interested. As private agencies demonstrate the value of psychiatric service in dealing with poverty and dependency, it is inevitable that eventually the State Mental Hygiene Department will be called upon to aid the Department of Charities in the solution of the problems with which the latter is concerned.

Cooperation between the State Mental Hygiene Department and the Labor Department will also promote a better understanding of industrial disputes, while labor conditions affecting the physical welfare of the worker will not then be considered to the exclusion of his mental needs, the denial of which causes so much labor unrest. The worker is no longer a tool but a person.

Psychiatric factors are constantly involved in the problems with which Compensation Departments deal, but in most states there is no organized machinery whereby psychiatric knowledge may be utilized in a systematic way.

State government is after all a unity, despite the fact its different departments, divisions and bureaus often function more or less independently with frequent lost motion, overlapping of function and inefficient service. A coordinating mechanism is needed and in the scheme of reorganization of state government adopted by the New York legislature the past winter, such a mechanism was provided. In the reorganized government, there will be a Division of Interdepartmental Relations which it is hoped may prove a means whereby the resources of one department may be readily rendered available for another so far as they may be profitably utilized. Certainly the Department of Mental Hygiene can render valuable service to its sister departments as has been suggested, but there will also be reciprocal advantage as any institutional system is in constant need of much technical assistance which its own resources fail to provide.

This Association, under its proposed plan of reorganization, will be able to utilize to greater advantage the known facts respecting

mental disease and defect and the social ills resulting therefrom in an effort to secure through legislation more uniform and satisfactory statutory provisions. Seeking increased coordination of psychiatric effort through closer association with allied psychiatric organizations it will increase its sphere of usefulness in seeking increased coordination of psychiatric effort through more unified and better organized state psychiatric agencies.

Deeds and motives are regarded as great in proportion to the number of people affected by them. The facts and modes of procedure whereby human conduct may be modified, as developed by psychiatric investigation, can be applied to advantage by every member of the community. Psychiatry is of personal concern to the normal as well as the abnormal. This Association, representing psychiatry upon the American continent has an unlimited field of usefulness before it, and, brilliant as have been its achievements in the past, it is safe to predict they will be overshadowed by those of the future.

POST-ENCEPHALITIC BEHAVIOR DISORDERS IN BOYS AND THEIR MANAGEMENT IN A HOSPITAL.

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I. INTRODUCTION.

Although some of the more callous of us have come to look upon tragic degenerations in the lives of adults as part of our civilized existence, none of us can bear to see such character changes in the lives of children. And yet we have come to know that under the influence of an inflammation of the brain such character changes are occurring constantly all about us. Unluckily these changes come in a subtle form, a wedging apart of a fairly intact intellect from deteriorating moral habits. One would prefer a physical trouble which would produce outspoken feeblemindedness with its limited range of harmful consequences to this encephalitis which may produce an intellectual, tormented and cruel monster out of a gentle girl or boy. Before our courts come children large and small whose bright minds go along aiding instead of preventing immoral and foolish actions. One wonders how many of them have had some physical catastrophe which has at an unlucky time upset a delicate mental balance.

When, after the World War and the influenza epidemic, these children appeared on our city streets this hospital thought that it

should accept a task very difficult for other organizations—the complete care and study of a selected group for a long time. A glance at the stories of these children will show the folly of expecting immediate good results. But in studying the slow process at work in these children, and the responses to remedial efforts, we have been following a safe path which may lead to more knowledge of the wider problems of childhood. There must be interest for physicians, psychologists, teachers, and lawyers in a description of a more civilized way of dealing with these appealing children now in our hands. If there can be sorted out of the mass of bad behavior now abroad in the community a part clearly due to medical causes the way will be cleared for the application of spiritual, educational or legal remedies as they may be tried by church, school or state. As things stand now a law which works well with ordinary boys may become discredited when it attempts to deal with a boy who conceals behind a bright intellect the scar of a character transformation produced by a brain lesion.

And so the following study represents the attempt of the Pennsylvania Hospital to clarify a confused situation. In the fall of 1924 there were many children in and about Philadelphia whose behavior had been badly influenced by epidemic encephalitis. They were sick and could get no treatment: general hospitals could not take them because they interfered with the care of other patients; state mental hospitals would not take them because of their youth; classes for the feebleminded would not take them because they were too intelligent; expelled from school, they were thrown back upon their homes where they became a moral danger to their brothers and sisters and to the neighborhood. And finally if they were in desperation sent to a reform school, they were too unruly to be dealt with and came home after a time to continue their bad conduct.

In this emergency this hospital considered its advantages and disadvantages for this peculiar task. As a private hospital it was flexible. In its department for nervous and mental diseases it had psychiatrists, psychologists, nurses and occupation teachers who were used to bad behavior—pernicious activity—in adult patients and who took pride in managing it as a medical and not a penal problem. It had a gymnasium, swimming pool and wide

playgrounds. It had laboratories where research was going on in problems of adults which seemed to be allied to the problems of these children. Disadvantages appeared in the presence of a body of adult mental patients and the absence of any school teaching facilities; these were for all practical purposes overcome by the setting apart of a separate ward which could be entered directly from the medical offices and from the playgrounds, by arranging for school sessions when the adults were on the playgrounds and by engaging a teacher with considerable experience in public schools.

Organization of the Group.

A beginning of the long treatment experiment was made when the first boys were admitted early in December, 1924. The class of boys, between the ages of 8 and 12 and averaging about ten in number, has now an eighteen months' record behind it which will be found in detail on the following pages.

These boys were selected as being intelligent and badly behaved; they were free from any physical evidence of gross brain lesion except strabismus. As far as we can determine from the search of the literature and from personal inquiries no such group of children has ever been observed under anything like the same conditions. About the same time that our own class gathered together, the State Hospital Commission of New York began to send to the King's Park State Hospital, to the care of Dr. Raynor, children suffering from the after effects of encephalitis or of some similar disease. But these cases were of both sexes and of all ages to 17 and included patients with parkinsonian syndromes and low intelligence quotients. So we regard the New York experiment as broader than our own and along different lines.

In general, excellent work has been done in the diagnosis of the so-called post-encephalitis cases and in the exposition of the need of institutional treatment, but proper treatment has been despaired of. Miss Blanche Cole ends her admirable description of ten Chicago boys and girls by saying, "At present there are no facilities for the adequate treatment of these children." Miss Dartt in New York speaks of "crying need" of a children's psychopathic hospital on the cottage plan and with no connection with a reformatory or a hospital for the insane. From England comes

the statement, "Although it is conceded that these children would be best in institutions there are no institutions suitable." The vanguard of these children is now forcing its way into state hospitals where so far only adults have been provided for. It is in the hope of being of service to such hospitals as they plan for new work with children that this study is published.

Schedule for the Day.

Let us preface a description of the very important schedule for the day—the machine by which the class has been managed—by telling about the brief outstanding behavior traits of these particular boys. At the time of their admission to the hospital they were all to be considered to be extraordinarily bad boys. They had found the initiative and courage to refuse absolutely to go to church and to school and to defy all the authority which they had previously obeyed. Two of them set many fires; most of them tormented other children; all of them have done some stealing. Three of the ten had been sent to some disciplinary institution only to resume their bad activities the moment they were released. Their conduct was not controlled apparently by any punishment. In addition they showed marked increase of psychomotor activity, distractibility and unstable emotional equilibrium. More than one of the boys had a record of breaking up a schoolroom; one boy in one day threw a brick through the window, spit on all the seats and had all the children in an uproar. Most of them were restless and tended to get into trouble at night.

With reference then to the behavior of these particular boys the following schedule has been adopted and has consistently been followed: 6.45 to 7.15 morning toilet, 7.15 to 7.45 breakfast, 7.45 to 8.15 work on the ward, 8.15 to 9.00 outdoor play, 9.00 to 9.15 preparation for school, 9.15 to 11.45 school, 11.45 to 12.15 indoor play and preparation for dinner, 12.15 to 12.45 dinner, 12.45 to 2.00 outdoor play or walk, 2.00 to 3.30 occupation shop, 3.30 to 4.30 gymnasium and swimming pool, 4.30 to 4.45 outdoor play, 4.45 to 5.15 preparation for supper, 5.15 to 5.45 supper, 5.45 to 6.45 play, 6.45 to 7.00 preparation for bed, 7.00 bed, 8.15 lights out. About eight of the boys slept in a small dormitory connected with the bathroom; usually two slept in a smaller room

across the hall; both of these rooms were under oversight by a night nurse.

Of the persons in charge of the boys with reference to this schedule probably the most important has been a graduate man nurse. At first there was also a woman nurse but it was found that with women school and occupation teachers she was unnecessary. The graduate nurse had charge all the year and upon him as an executive has fallen the burden of discipline. It has been his place to back up the discipline of the teachers. He has found that in spite of the strong individualistic behavior of these boys before their entrance to the class the best weapon was a group spirit which he aroused and trained to look down upon the individual that got into trouble. He has used the children's interests in competition, has kept charts of behavior, and on the basis of his records has awarded prizes to those who have advanced their rating. More negative measures have been compelling the child to stand in the corner or ignoring the child for a time and not allowing him to help with the ward work. At the beginning of our work it was thought that resort would often be had to the medical pack but this has never proved necessary. This nurse has taken the initiative in finding new things for the boys to do and has guided them in such natural projects as building snow forts and an elaborate club house.

School work for two hours on each forenoon has been conducted by a teacher with many years experience in public school work and with some experience in ungraded classes. With only ten pupils she has been able to allow much freedom of movement and to give much attention to individual needs. In general while the teacher's position has been a trying one there has been as much order in the classroom as was necessary for good work. In order to protect the delicate habits that might be in process of formation the school has been run six days a week and all during the summer. When the teacher has been ill there has been a slight slump in behavior. In arithmetic the children were handled in three groups in an effort to give drill in fundamentals. Every pupil but one made progress. Language work was carried on with the whole class. All of the children are very fond of dramatization and story-telling day is looked forward to eagerly. Spelling work has been done in three groups corresponding to fourth, sec-

ond and first grade. History and geography have been done with the class as a whole and in general the progress of all the pupils has been definite. The school teacher has made record reports upon each child each week and also occasionally summary reports. These will be found in the individual records later.

Work in music has been under a special teacher for the most part and has been enthusiastically done.

Occupational therapy has taken the place of a second school session from 2.00 to 3.30 p. m. This consisted first of drawing and painting, paper cut-outs, cardboard construction, simple types of cord knotting, weaving on cardboard looms, reed basketry and the making and painting of simple toys. Later when the boys were promoted to the workshop they commenced more advanced woodwork, making book racks, book ends, coat hangers, doorsteps and garden sticks, learning to handle, in addition to the saws, files, and hammers in the first period of their work, planes, chisels and mitre box. Towards spring about twenty bird houses and flower boxes were in construction. When the willow crop was ready to strip the boys begged to be allowed to help. In the summer they did hard work in the gardens, each having an individual plot 12 feet by 12 feet and this work took the place of shops from May to December. Their interest in this work grew with good crops until they had under cultivation a plot 50 feet wide by 150 feet long. On rainy days in the summer when garden work was impossible kites were made and decorated. Several of the older boys were promoted to the use of the jig saw. A last effort has been joint work to make a barn for animal pets and a club house for themselves.

Gymnasium work has been managed in the same way as school and occupational therapy and the same weekly reports of behavior and progress have been furnished.

At times during the year a storyteller has taken the class in the evenings.

A very remarkable result of hospitalization has been that children with histories of insomnia have slept soundly and quietly all night long. This good record has never been broken. As this is being written a new boy who has entered the class is having difficulty in going to sleep, often staying awake until midnight. This is the first instance of its kind with which we have had to deal.

In the past histories of the boys who are sleeping well are such phrases as these:

"Whistled and sang all night."

"Roamed the streets all night."

"Afraid to sleep at night."

"Talked all night."

"Wandered about all night, slept in barrels, turned in fire alarms."

"Roamed the house all night, going through bureau drawers, and reporting all the visits of the milkman and the baker."

Certainly the filling of every minute of the day's time has had something to do with this. It should be remembered that besides the regular schedule these boys have had a good deal to do in submitting to the elaborate physical and mental examinations which are described in detail in later chapters and in general just below.

The ordinary physical examinations have been supplemented by anthropological measurements and photographs, cardio-vascular tests, basal metabolism measurements, X-ray studies and examinations by different specialists, in particular the oculist. This very important statement can be made—during the year there has been no sign of any physical deterioration and in fact the reverse has been true.

The mental examination has been intensive. Very elaborate and varied intelligence tests have been used and often repeated. The psychologist is engaged in personality studies and has subjected the boys to many laboratory experiments.

It seems to us that the general results of this schedule applied by this personnel have been fairly definite. The children have learned something in school; they have gained physically; they are more easily managed in every way and they have remained happy and with no wish to leave the hospital. On the other hand there is little evidence that the essential cause of their behavior difficulties has been done away with. It must be remembered however that in some cases the habit of bad behavior had been confirmed by years of practice before these boys entered the hospital. Certainly the community has been fully protected from these boys for a year and a half. What will happen when such a group has been educated in good behavior for as long a time as has been

taken by their training in bad habits remains to be seen. There is reason to expect good results.

II. BEHAVIOR CHANGES FOLLOWING ENCEPHALITIS.

Review of the Literature.

(By G. E. Partridge.)

It appears now to be well established as we have already intimated that following epidemic encephalitis, sometimes directly, sometimes after a long interval, there appear in some cases profound changes in personality, or character; behavior becomes bad, and the child (these behavior cases are almost always children) is unmanageable.

From all countries where epidemic encephalitis has been observed closely, instances of behavior change have been reported. What proportion these represent of the whole number of encephalitis victims no one yet knows, but surveys in several places indicate that there are more children affected than has commonly been supposed; that they are very difficult to manage, and have often been misunderstood and improperly treated. Many are uncontrollable at home, and in schools they have proved to be disruptive elements. They do not thrive in the ordinary placement situation, and are not suited for care in the existing type of institution. They are menaces in their own communities, and as individuals they are out of line of social remedial endeavors.

As we shall see presently, the behavior syndrome presented in the post-encephalitic child has some unique features. It is a picture not quite duplicated in any other disease. Its nearest relative appears to be the cerebral trauma case. Strecker and Ebaugh studied thirty of these, found fifteen with "traumatic constitution," all of these being unmanageable in school. Changes in behavior were common; there was a history of explosive conduct, irritability, over-activity, destructiveness, running away, excitability, general incorrigibility, cruelty, violent temper, stealing, quarrelsomeness, peculiar habits. Not all of these symptoms occur in one child, of course, but this enumeration suggests the condition.[1]

[1] E. A. Strecker and F. G. Ebaugh: Neuropsychiatric sequelæ of cerebral trauma in children. Archives of Neurology and Psychiatry, Oct., 1924. Vol. 12, pp. 443-453.

A careful search in the records of a neuro-psychiatric clinic failed to show that these marked changes of behavior occur at all consistently on any other basis. We could find but few instances recorded of abrupt change in character or behavior, and no diseases that might be suspected of being an important factor in subsequent development of the behavior difficulties were at all frequently mentioned, the only possible exceptions being lues and chorea. There were cases presenting in some ways the features of the encephalitis case, without the history of abrupt change and lacking any recorded etiology that seemed definite; but we could find no good evidence of any other important contributors to the severer types of behavior disorders that we could identify as organic factors—except encephalitis and trauma.[2]

The literature of encephalitis is now voluminous, amounting to probably 3000 titles, which include a respectable number of discussions of the problems of the behavior reactions. With the general phases of this subject of encephalitis we shall have little to do, but the work done on the problems of behavior and the theoretical questions relating to it we need to review in more detail.

Epidemic encephalitis, we now know, is not a new disease, but has a history running back even to ancient times. But previous to 1918 there was no discussion of its epidemic phases important to our present purposes, and the sequelæ, such as behavior changes, were apparently unknown. It is to be noticed that the virus of the disease still eludes research, and about all we know is "that it is a filterable virus, and that its location is the naso-pharynx."[3] Even that, so far as the latter half of the statement is concerned, has recently been brought into question.

The clinical and pathological classifications of the disease are of interest mainly as revealing the great variety of the clinical forms found, the diffuseness of the lesions and the variability from case to case, and the many symptoms. Encephalitis simulates many other diseases, and no part of the nervous system

[2] This study was made by Mr. F. Sulzer mainly from the records of the Neuro-Psychiatric Clinic of Pennsylvania Hospital. Four hundred behavior cases included in about 4000 records were considered.

[3] Wimmer: Chronic Encephalitis.

appears to have been invulnerable to attack, although by far the greater burden of the invasion has been borne by the basal mechanisms. So we find a general type, pyramidal system type, thalamic, corpus striatum, brain stem, spinal, peripheral, and diffuse multiple; and among clinical pictures, lethargic, cataleptic, hemiplegic, paralysis agitans, polioencephalitic, choreiform, myoclonic, multiform, meningitic, acute anterior poliomyelitis, epilepto-maniacal, acute psychotic, sympathetic system, abortive type.[4]

Wimmer has done much to clear up questions about the existence and the course of a chronic form of epidemic encephalitis. His conclusion that there is a true chronic form in which the disease may remain active for years, that the greater number of these cases are progressive, although there may be intermittency, and that three main types appear—hyperkinetic, hypokinetic, and mixed—may be regarded as authoritative.

We shall need to discuss later the pathology of the behavior type of cases; at this point it is enough to say that the behavior reaction cannot be oriented definitely in any clinical picture, or identified with any particular degree of severity of the acute attack, or correlated with precision with a localization of lesion, or course of a chronic process. There are some clues that help us to narrow down the hypotheses; but there can be as yet no final answers to these questions. We find some predominance of lethargic symptoms and oculo-motor effects in the behavior cases, they do not usually have very severe neurological residuals, they are generally hyperkinetic, they do not show any progressive deterioration, such as the parkinsonian cases do, or in general any evidence of an active chronic process, affecting either the intelligence or the behavior.

We have little to do with the general psychiatric features of encephalitis. Definite psychoses following it are rare, most of them are among adults, and they have usually taken the form of some phase of manic-depressive psychosis, or a profound bradyphrenic, precox-like reaction, which may present the features of deterioration and dementia.

The behavior changes in children we say are mainly associated with some degree of hyperkinesis, but the opposite condition may

[4] Here we are following Tilney and Howe, Epidemic Encephalitis, 1921.

be found, with slowing of interests, querulousness, babyishness, often associated with more or less marked parkinsonian phenomena. We are interested mainly in the former type which presents many behavior problems. There are many cases in which there is some change of disposition, many in which preexisting psychoneurotic or psychopathic tendencies are brought out by the disease. It is possible that the complete reversal of character is not often found, but there can be no doubt of the existence of the behavior form of sequel in encephalitis which is a reality to be reckoned with both medically and socially.

Kirby and Davis say that some change in disposition nearly always remains, and may be the only sign of incomplete recovery and that there is evidence of the persistence of emotional alteration with little of organic mental defects. Still remarks that most children who recover show some effects in school.[5] It is not these milder and less distinct disorders of conduct that we are most concerned with, however, but the severer forms which seem to constitute a class by themselves, and have something of the nature of a pathological entity, showing a syndrome that is readily recognized, and from which some physicians are willing to diagnose post-encephalitic processes or sequelæ of the disease.

It seems to be agreed that most of these behavior changes occur in what may be called the middle age of childhood. Younger children—up to seven or thereabouts—are more likely to show changes in intelligence, while in adults we find the physical types, and a few psychotic conditions. Hall[6] says that idiocy following this disease is practically limited to children of five years and younger. The behavior disorders are most frequent in the period from seven to sixteen or eighteen, and among these the occurrence of measurable intellectual impairment seems to be the rare exception.

Whether the behavior picture of post-encephalitis is to be regarded as really specific to that disease, is not yet clear. We have found evidence that nothing quite matches it except possibly the

[5] Quoted by G. A. Auden: Behavior changes supervening upon encephalitis in children. Lancet, Oct. 28, 1922, pp. 901-904.

[6] A. J. Hall: The mental sequelæ of epidemic encephalitis in children. Brit. Med. Journ., Jan. 17, 1925

traumatic disorders. Such statements as that of Beverly and Sherman,[1] who are tempted to make the diagnosis from the behavior picture alone, are found in the literature, and it seems to be true that no disease produces with any regularity conduct disorders of *any kind,* even disease which on *a priori* grounds we might think would be likely to do so. It is stated, for example, that no single case of behavior reaction has been reported in Birmingham in three years as occurring following epidemic meningitis. If we except syphilis with its exceedingly varied manifestations, chorea seems to produce most often a behavior picture. Auden sees much similarity between the psychic manifestations of chorea and encephalitis, and speaks of chorea as showing faulty emotional control, irritability, outbursts, reduction of powers of concentration, departure from correct conduct, muscular incoordination, weakness. At the same time one wonders, in the light of recent experience, whether "chorea" in these cases is not sometimes encephalitis.

Wimmer gives a very good account of the behavior case of the post-encephalitic type. He sees uniformity in the picture, finds that the delinquencies are of an *impulsive* nature, displaying little planning, and says that the fully developed case reminds one of the erethic imbecile, as one may observe by considering the list of symptoms he records as characteristic, which follows:

> Restlessness, garrulousness, meddlesomeness, wideawake but erratic attention, curiosity, moods of foolish mirthfulness, irritability, queer manners, desire to tease, querulousness, marked emotional instability with outbursts of anger, etc., destructiveness, biting nails, auto-mutilations, willful spitting on others, violence, fire-setting, cruelty, truancy, vagrancy, begging, dishonesty, mendacity, pilfering, shirking, precocious eroticism.

Beverly and Sherman find most frequently:

> Change in disposition, inability to sleep at night, violent outbursts of temper, irresponsibility, incorrigibility in school, changes in school work, cruelty to animals. They find also: Emotional shallowness, childish mannerisms, impulsive delinquencies, poor insight, appearance of deterioration, hyperactivity, irritability, alertness and marked emotional instability, explosive reactions—but also marked indifference and sluggish physical reactions.

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[1] Beverly and Sherman: Post-encephalitic behavior disturbance without physical signs. Am. Journ., Diseases of Children, Vol. 27, 1924, 565-568.

Anderson [8] found:

> Disobedience, irritability, fits of temper, garrulity without mood alteration, destructiveness, cruelty, conduct resembling kleptomania, only rarely great emotionality, seldom mental impairment.

Auden [9] studied six cases of the behavior type, and noted:

> Increased emotional instability, reduction of inhibitions, marked restlessness (especially in the evening), apathy, inability to sustain attention. Some showed increased sensibility to environmental stresses. There was also an "irregular type of intelligence capacity."

Auden noticed also some resemblance between these children and some epileptics: as regards irritability, lethargy, introversion, self-assertiveness, absence of resistance to sudden impulsions.

Hall [10] says that following an attack of encephalitis many children who were previously docile become aggressive, cheeky, untruthful; they quarrel, fight, are dirty, wander, show sexual tendencies; and there are cases in which hooliganism, homicide or suicide have occurred in children of tender years.

Bolsi [11] finds the character changes especially in the range of years from five to eighteen, and records these symptoms: Psychomotor restlessness, capriciousness, lying, temper tantrums, violence, impulsiveness, instability of mood, immorality, running away, stealing, criminal tendencies, emotional disturbances, sexual precocity, sexual perversions, disturbances of the instinct of self-preservation.

Hohman [12] describes children having behavior changes somewhat as follows:

> They became irritable, fussy, quick-tempered, or boisterous, and restless. They teased other children unmercifully, or showed streaks of brutality.

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[8] Grace H. Anderson: Sequelæ of epidemic encephalitis in childhood, with notes on prognosis as regards complete recovery. Quart. Journ. Med., Apr., 1923, pp. 173-191.

[9] G. A. Auden: Behavior changes supervening upon encephalitis in children. Lancet, Oct. 28, 1922. Pp. 901-904.

[10] A. J. Hall: The mental sequelæ of epidemic encephalitis in children. Brit. Med. Jour., Jan. 17, 1922.

[11] D. Bolsi: La sindrome psicopatica del faniulle e degli adolescenti de encefalite epidemica. Riv. de Patol. nerv., 1924, xxix, pp. 142-170.

[12] L. B. Hohman: Behavior disorders in children following encephalitis. Bulletin of Johns Hopkins Hospital, 33, Oct., 1922, pp. 372-375. Also, Encephalitis, its psychotic manifestations with a report of 23 cases. Archiv. Neurol. and Psychiatry, 6, Sept. 1921, pp. 295-333.

In school they were impudent, disrespectful, disobedient, or no longer amenable to discipline. At home they would curse their parents or even strike at them. They were indolent or indifferent. Several said they would do as they pleased. There has been frequent running away among them, and they would stay on the street at all hours. Some lost respect for personal and public property; they destroyed their own belongings or the house furnishings. They were frequently negligent about their personal appearance, slovenly, taking their clothes off in public. They were careless with their excreta, even playing with them. Several have shown exhibition tendencies. There was fabricating and lying. There were temper tantrums, screaming attacks which were uncontrollable. Some became emotionally quite unstable, weeping on the slightest provocation, were capricious, moody, or very irritable, whiney and excitable. Discipline was simply resented and was quite ineffectual.

Bonhoeffer [13] writes of cases in which the acute stage has shown delirium, disordered sleep, ocular symptoms, and in some cases panting respiration; and afterwards these children became talkative, bold, obtrusive, without respect and inhibition, unsocial, having occasional emotional outbreaks.

These accounts of the behavior of post-encephalitic children might be extended, but these will be sufficient to show the general characteristics of the class. The victims are distinguished by the severity of their symptoms, their great restlessness, the display of strong instinctive reactions, especially fighting, their propensity for interfering, and the presence of specific compulsive acts. Intelligence remains intact, and they do not lose their moral ideas. We shall leave to a later point in the study a more precise comparison of the reactions of these children with those occurring in other organic conditions, in which we shall need to consider mental deficiency, syphilis, brain trauma, chorea and epilepsy. There is seldom to be found among mental disorders any reaction that is entirely specific and definitely delimited, and this is no exception. At the same time we seem to be dealing with a syndrome which appears very frequently in its main features in encephalitis, and is seldom found in other disorders. These children are recognized often by the non-medical observer, especially from their

[13] K. Bonhoeffer: Psychiatric deductions from epidemic encephalitis. Deutsch. med. Wchnschr., 49, Nov. 2, 1923, pp. 1385-1386. Also Psychic sequelæ of epidemic encephalitis in children. Klin. Wchnschr., July 15, 1922. Pp. 1446-1449.

conduct in school, and so far as a superficial survey goes, they appear to have class traits that identify them with some degree of certainty.

The few good reports on the course of the encephalitic behavior disorders are of much interest. No one who has attempted to manage such children has found it an easy task nor has anyone so far as is known attained any complete success except in the rare case. These children are deeply affected in their conduct. Care in an institution, especially hospitalization, over a considerable period seems to have given the best results. Hall says that most of the behavior cases among children improve under hospital conditions, and that these children are readily made worse by excitement. Auden also believes that in the larger number of cases there is gradual amelioration of behavior and self-control. Leahy and Sands say that experience has brought greater hopefulness as regards prognosis: that over half of their cases showed marked improvement or made recovery. Anderson can report that only one case has recovered from the psychical change in two years, but that several of her cases in institutions are beginning to indicate improvement. No child among those suffering from habit peculiarities has recovered among Anderson's cases in over two years, and no child who developed hyperpnœic symptoms has recovered in this period. Wimmer thinks that in cases of children with predominant psychotic symptoms, such as change of character, the trouble seems to be "extremely tenacious." Hohman says that time seems to be the only healing factor and that punishment helps not at all. Some recent discussion of these problems [14] showed a growing interest in the psychoanalytic approach. A report on the care in hospital of a group of fifty of these children was concluded with the statement that as regards treatment we seem to be at the end of resources unless there can be opportunity to analyze these behavior disorders. So far no one has found any routine medical treatment that promises much. Good hygiene, simplified life, with educative, especially occupational programs seems hitherto to have offered most. A recent project for combining these two forms of treatment, general and psychoanalytic, and caring for a selected few cases in "a laboratory

[14] New York Neurological Association, Feb. 2, 1926.

home," in the hope that a continued and detailed study of the few cases may show the way for the treatment of larger numbers offers some hope.

Physiological and Psychological Interpretations of the Behavior Reactions.

There is no dearth of theoretical interpretations of the mental reactions following encephalitis. We have some well established facts to found upon: there is some knowledge of the pathology of encephalitis, there are clinical data, and our general knowledge of the structure and physiology of the nervous system. On the psychological side we are not quite so well equipped, but there is available psychological knowledge of instincts and emotions, and there are some data from psychoanalytic studies.

There seem to be four main types of explanation of the behavior reactions related to:

1. Correlation with localized lesions.

2. Toxic effects, or changes of function incident to rehabilitation of tissues or chronic processes.

3. Indirect effects of lesions or pathological processes, such as unbalance of functions.

4. Psychic and social factors, effects of prolonged convalescence, interruption of education.

Attention centers, on the neurological side, upon the basal ganglia, where the most marked definite pathology has been found. There can be no doubt that in the parkinsonian type of sequelæ there are localized lesions and progressive deterioration. The case for the behavior type is not so clear. Here there is no evidence of progressive degeneration and we have to infer localization from accompanying neural signs, such as oculo-motor changes, the general hyperkinesis, myoclonic symptoms, and the like.

The most purely neurological theory of the behavior reactions would account for these changes as due not to some general effect upon personality, but to definite physical changes, localized most probably in the basal ganglia. The behavior changes on this view are naturally regarded as related especially to the motor disturbances; and come at one end of a scale of physiological changes represented by chorea on one hand and paralysis agitans on the

other. Structures involved are to be thought of as motor, inhibitory and tonus producing or regulating. Wimmer, for example, says that the fundamental feature of chronic encephalitis is the extrapyramidal syndrome in its various forms: The akinetic, the dystonic, and the hyperkinetic.

Gerstmann and Kauders [15] think that the primary change in the behavior is related to a pathologically increased activity of the motor impulses due either to the excitation or the inhibition of parts of the strio-pallidal system, the result being a disparity between the motor and the psychic elements of the personality. What occurs is not a mood elevation, but a motor hyperactivity, or various impulsive activities not checked by memory or volition and not regulated by the personality. So there is a more or less primitive letting loose of the motor mechanisms in response to the environment. There is a regression in the motor adjustment, a reinstatement of the *Einstellungs-Motorik* of the early childhood period. There is no true psychopathy—only a localized lesion which expresses itself in a picture superficially resembling a psychopathy.

Bolsi's [16] explanation of the behavior disorders is that the seat of the encephalitis is in the ganglia of the base and the encephalon and that we may say that through irritative processes the tonus of the vegeto-emotive centers is affected.

Wimmer [17] suggests that the emotional incontinence may be due to a deficiency of inhibitory influences from the corpus striatum.

Marinesco [18] thinks that most of the prominent symptoms of encephalitis are due to disturbed tonus, that the subthalamic structures most affected are the locus niger and the neighboring locus cæruleus and the body of Luys, and that the function of these is the regulating of tonus.

Collin and Réquin [19] try to explain the different effects of lesions at different ages. Every lesion, they conclude, occurring at a time

[15] Gerstmann and Kauders, Arch. f. Psychiat., 1924, lxxi, p. 165.

[16] Bolsi, *op. cit.*

[17] Wimmer, *op. cit.*

[18] Marinesco—reviewed in Bassoe.

[19] A. Collin and J. Réquin: Psychic sequelæ of epidemic encephalitis in children. Arch. de med. d. enf. May, 1923, Vol. 26, pp. 265-268. Abstracted in J. A. M. A. Aug. 25, 1923, Vol. 81, p. 685.

preceding the complete development of the nervous connections of the encephalon may prevent the connections being produced. Mental arrest is frequent in cerebral affections of the young, whatever the type of the affection. Every cerebral affection, on the other hand, occurring after the development of the connecting paths, and before the development of the preponderance of the higher nervous system over the other part, results in the higher centers being unable to inhibit the excitation of the lower centers, so there are impulsive and automatic acts, predominance of the bad instincts and infantilism.

Brief notice of some of the other points of view taken in interpreting the behavior difficulties will suffice to show how far we are from a consensus of opinion on the subject.

There has been considerable discussion as to whether in the later manifestations of encephalitis we are dealing with a chronic infection with persistent virus (this being concluded by von Economo, Netter and others); or whether there is to be assumed merely a toxic action. The former theory, it is suggested, would offer an interpretation like that which is accepted in respect to the para-syphilitic disorders; the latter would ally the chronic conditions rather to such processes as brain degeneration following carbon monoxid poisoning and the like.

The view has been expressed that the sequelæ are due mainly to vascular changes. Wimmer suggests that there may be a toxic element as shown in the fatigue and the unbalanced emotions; and that some of the general psychotic symptoms might be referred to the cortex, although it is not likely that there is usually any severe cortical lesion. Collin and Réquin think of the character changes as non-specific, and hold that the most diverse toxin affections may produce character changes like these of encephalitis: for example, syphilis, tubercle bacillus, digestive and hepatic affections. There is a theory, again, that the mental changes represent a phase of the irritative processes going on in the healing of lesions, scar tissue formation and the like. Hall believes that the behavior cases involve a wider range in the nervous system than the parkinsonian cases do. Hohman thinks of the behavior changes as a form of interruption of automaticity; when there are diffuse organic changes the personality is apt to rupture at the point of greatest vulnerability. Another explanation is that

the mental symptoms result from degenerative changes that produce no immediate neurological signs—another that they are due to repeated mild infections productive of no clinical findings.

These brief summaries will show something of the range of interpretations of the behavior syndromes of encephalitis. Those so far mentioned emphasize especially the brain pathology, but show that we may consider indirect as well as direct effects of lesions, unbalance of function, and the like. Some writers have thought of the behavior changes more as effects upon personality than as direct effects of lesions, or as consequences of a general hyperkinesis. Some recent discussions have made more use of psychological factors in explaining behavior in encephalitis. L. Pierce Clark[20] had tried to show that these cases are amenable to psychoanalytic treatment, and that they can be treated almost as non-organic affections are. There is no evidence, he would hold, that the lesion has a *direct* effect upon the behavior. There must be some relation, he says, but not a direct causal one. All kinds of cerebral lesions in a child are apt to leave some mental symptoms. In the encephalitis cases we are dealing with "ego neuroses," we assume an effect on the psyche as occurs in other cerebral lesions. Here there is deep wounding. There are narcissistic fixations, the play of instincts and repressions, release of unconscious forces, psychic compensation for neurotic defects. The sexual tendencies that appear, anal and oral eroticisms, show that there has been deep wounding of the ego.

Psychic factors are brought into the foreground also by those who think that the development of feelings of inferiority growing out of weakness, the prolonged convalescence, the fact that these children are regarded oftentimes by their mates as "dumb" or "sleepy"—in a word, as mentally affected—the long interruption of school and general sidetracking of activities, the changed position in the family as invalids are important elements in the development of the behavior reaction.

Before attempting to pass judgment at all upon the various points of view taken in the interpretation of these behavior difficulties, we shall present a study of our own cases.

[20] Paper read at a meeting of the New York Neurological Society, Feb., 1926.

III. PRESENTATION OF CASES.

JOHN HELLER.

John Heller was born August 7, 1912, and entered the hospital class on December 8, 1924, at the age of 12.

His father was 28 at that time and had come to the United States from Switzerland when he was 16. He is a machinist who has always been strong and healthy, and well employed.

The mother was 21 when the patient was born and before and since that time she has been in good health.

A sister is now 16, in the second year of high school, a general favorite and a good mixer, standing well in her studies and entering well into all school sports. She plays the violin.

A brother, age 15, in junior high school, is cheerful, bright, gets along well at school and plays the piano.

Paternal grandfather died in Switzerland at 56, was always a strong, healthy man. The paternal grandmother is living at 68 and is subject to pleurisy. Of four paternal uncles: one was killed in the war, and the others are in good health. A paternal aunt is well.

The maternal grandfather was born in Switzerland but came to this country and became a citizen. He was strong and healthy as a young man and died at 38 with typhoid fever. The maternal grandmother was 58 years of age when she died of "chronic neuritis" One maternal uncle is living and well; one maternal aunt died in infancy.

The patient's birth was normal. He was breast-fed. It is stated that he was overcome by gas when he was two weeks old; his teeth appeared at the average times; he talked at one year; and walked at one and one-half years of age. Up to the age of six he was bright and caused no trouble in any way. He had measles, mumps, chicken-pox and whooping-cough. He was vaccinated five times, his arm being sore for one year. Nothing unusual was noticed about him. None of the family were very demonstrative in showing affection as they considered this rather babyish. He was not shy or timid. At the age of three he was able to write his numbers and he learned to read and write to some extent before he went to school.

He was very anxious to go to school and was very proud when he entered at six. Shortly after he entered he had influenza and lost two months of the school work. He complained of seeing something large and black and would not go up stairs alone. There was over-salivation at that time. During the first year the reports from his teacher were very good and he was fond of school, was bright, happy and cheerful, getting on well at play with the other children.

During the second year of school certain things, which were mildly evidenced after influenza, began to be more noticeable, although his parents thought he did good school work for the larger part of this year. He was more sleepy than usual, often wet the bed, did not want to get up in the morning, had to be assisted in dressing, and would fall asleep in the

bathtub. The teacher reported that he sometimes fell asleep in class. At home he would fall asleep at the table "even when . . . . he had ice cream placed before him." These difficulties did not begin suddenly or all together, but gradually increased up to the age of nine when he was badly beaten by a 19-year-old boy. While the mother seems inclined to attribute the change in his behavior to this attack by the older boy, the father gives a little different story. The mother emphasizes what a shock this fight was to him and says that before it he did not have very many symptoms, after it he acted as if he had St. Vitus's dance and was teased a lot by other boys. The father says he was worse after the beating, but had begun to fall down in his school work sometime before this.

At the time that he had the beating in June he had just finished the second grade and the following summer his behavior underwent a very marked change for the worse. All of the previously noted disturbing behavior was emphasized, and in addition he began to drop things and to have shaking spells. He was restless, unmanageable, irritable and got into many fights (it is possible that this tendency to pick fights resulted in his being beaten by the older boy). The patient himself states that before the beating he fell asleep easily and often felt tired, but since the beating he has gotten into more trouble than he did before. He says that this trouble was caused by his disobedience and restlessness, and by his crying whenever his brother or sister had anything which he wanted. He says he sometimes told fibs and sometimes stole a nickel or so from his mother. The parents say that he took pennies without permission and spent them for candy or gave them away.

A great development during the summer was a feeling of fear. At home he was afraid to be left alone, and instead of going to bed he placed pillows on chairs to sleep on. The next fall in the classroom he was unmanageable; he would get up and walk about the room when he felt restless. He was placed in a special class, but he was irritable, struck other children and continued generally obnoxious. He took his own money and rode some miles and back on the same train; he fought constantly with the neighborhood children or with his brother and kept the house in a turmoil. He continued to be sleepy in the daytime and became very wakeful at night. He used to get up and sit in a window at night, but would never give any explanation for this, a habit which he began during his influenza attack. Little things would upset him emotionally. All that summer he had had dreams of black things and the like, used to talk in his sleep a great deal. After a short time in a special class he was sent home from school and the family would spend hours at home in the evening trying to teach him, without any success. He once said he wished he were dead and he became very fussy about his food. While he had a seat in the third grade this was not because he was doing the school work, but because he had been tried everywhere else in the school with no success.

At 10 years of age he was taken to the Psychological Clinic at the University of Pennsylvania Hospital and from there referred to the Neuro-

psychiatric Clinic of the same hospital, January 10, 1923. On this date physical examination showed some strabismus of the right eye and some choreiform movement of the right shoulder. The boy complained of some difficulty in vision and he himself described a period after influenza in which he was delirious and had diplopia followed by lethargy. The clinic made a diagnosis of epidemic encephalitis. The mother's report of his mental condition to the Philadelphia General Hospital, at this time, was that the boy was stubborn, hard to get along with, nervous and twitchy, often sick at the stomach and often complaining of the taste of blood in his mouth.

He reported again at this clinic February 27, 1923, and on April 12 of the same year. At the latter date it was found that he frequently blew his nose, sniffed, and at times increased his respiratory rate several times the normal number per minute. A statement which the mother made indicated marked memory disturbance, but as the boy did not cooperate well in the memory test there was no way to confirm a memory difficulty.

There seems to have been no change in his conduct during the summer in which he became 11 years old. He was examined at the Psychological Clinic at the University of Pennsylvania June 3, 1923, and received some clinic teaching. He did not however obtain first grade proficiency in reading, spelling or arithmetic but he showed marked ability with mechanical devices, displayed good intelligence and was trainable.

He was taken to a special class in a General Hospital in October, 1923, and remained there until June, 1924. Just after leaving the hospital on June 14 and just before his 12th birthday, he was examined by a psychologist of the Board of Education who found him not feebleminded, using his hands well, planning well, having good learning ability. His memory span was six auditory, seven visual. His memory was good. He gave superior definitions, knew differences and likenesses and was able to classify. He did not define abstract words and his arithmetic and reading were not better than Grade 1-B.

On September 22 and on November 6, 1924, he was examined again at the Philadelphia General Hospital and showed some facial tics; he complained of having arguments with other boys but seemed to be rather better than at his last visit to the clinic. During this fall a psychologist also reported that he was quiet and obedient at an examination, although it was reported to her that he was still excitable and irritable.

No change appeared in his behavior this fall and he was brought to the Department for Mental and Nervous Diseases of the Pennsylvania Hospital on December 8, 1924.

On the first day at the hospital and for the next two weeks he was quiet, contented and well behaved, but occasionally restless and inattentive. Just after Christmas he was more noisy and showed a tendency to bully and tease other boys. On one occasion he refused to eat, saying he wanted to be coaxed. He went home for Christmas. During these first three weeks he was given a general physical and mental examination.

MENTAL EXAMINATION.

He was reported as ordinarily well behaved; occasionally disobedient; sullen when displeased or reprimanded; his speech was direct and to the point; he was ordinarily cheerful and smiling. He said that he was afraid of high places; that he stuck his head under the covers when he heard some one walk; that he twice heard sounds like whispering in his ears—he could not understand the words and thought it was imagination. He said that he had gotten into more trouble since his attack of influenza. "I get mad when kids call me names and hit me. I sometimes start fights for the fun of it."

His intelligence quotient tested by the Standard Revision on December 9, 1924, was 101. By performance tests on December 15 the mental age was 15 years, 1 month.

Recognition of pictures was perfect: memory for sentences was good, but auditory memory was only fair. He was superior to others in an assorted class in all the psychological examinations.

All this was in striking contrast to his school tests where the normal grade for his age was VII. In reading, arithmetic and spelling he could pass only first grade work, and in language only Grade III.

Physicians' notes on his behavior for the first three weeks emphasized his general quietness and obedience in school and in occupational therapy, with an occasional break-over into a noisy bullying disobedience. When the regular nurses were on the ward he was about the best boy, but when they were absent he was about the worst. The nurses' reports confirm the physicians', but mention sulkiness and the fact that at one time he tore the bed apart. When corrected he had a tendency to cover his head with a blanket or get under the bed. Two days before Christmas he was so restless and turbulent that he was put to bed. The occupational department reported generally good behavior, there was facial tension and facial (especial mouth) movement when doing such work as cutting with scissors.

PHYSICAL EXAMINATION.

The musculature was firm and well developed with a fat layer of moderate thickness somewhat increased over the abdomen. He was alert, erect, well nourished; ears were flaring; he breathed through his mouth; there is evidence that his tonsils had been removed but there is a deflection of septum to the right with partial obstruction of the right nostril. There was sinus arrythmia, a pulse of 70 and a blood pressure of 115 to 70—a marked scrotal fold. Neurological examination showed very lively knee jerks with the left Achilles reflexes greater than the right. Urinalysis and blood count showed nothing remarkable, Wassermann was negative, basal metabolism was — 11 per cent and — 13 per cent. X-Ray examination of the sella turcica showed it to be oval and opening directly backwards. Oculist's examination including measurement of visual field showed nothing unusual.

BEHAVIOR.

During the hospital year (practically the calendar year 1924), his 13th birthday came (in August). His general behavior of the first three weeks was fairly characteristic of John's whole hospital career. There has always been a marked difference between his poor classroom work and his excellent work in the occupational therapy room. It might be well to list a number of definite instances of bad behavior: he has thrown his shoe through the window; put his feet on the desk and yelled when the school teacher was talking; often pinched and fought with other boys; has been sulky and sullen; has complained much of his stomach distress; feigned illness.

During the summer his sulkiness and tendency to tease others was very marked; at times he has been profane, and there was probably one instance of homosexual relations with another boy. When one of the larger boys left he took his place as leader. He responded well to the new responsibilities put upon him. He was always interested in anything which gave him a chance to show his authority to others. In making ready for a birthday party for one of the other boys John finally decided he wouldn't go, and got under the bed, explaining that if anything went wrong he would be blamed for it. At times he has come into the office and asked to stay there in order to keep out of trouble. He talked a good deal about being good or bad and said that sometimes he felt like raising the dickens. It would be wrong however not to bring out the fact that there has been a general tendency upwards in his behavior which after all has in the main been good. Usually he has been conscientious and industrious, interested and friendly. He has been self-critical and self-depreciating of his deficiency in school which he says make him out that he is stupid. However, he was always a poor loser in games and sulked when his team lost. He was very self-conscious about doing work before the other children; he was apt to tell on other children; there were occasionally instances of bed-wetting. He gained 15 pounds in weight in the first half of the year.

The school teacher's report, leaving out statements which are already in the record is as follows: His memory for spelling, arithmetic and reading is poor; he is firmly convinced that he cannot learn to read and in fact he has improved but little during the year. His spelling is also very poor and his progress in arithmetic is very slow. In other subjects he has improved. He is willing to work and can think things out for himself, giving much attention to details. He makes his work as finished as possible and he is seldom idle.

A report from the gymnasium director mentions some trouble in controlling his muscles and a great improvement in his ability to do exercises correctly. He has learned much about swimming, sometimes his attention wanders for a few seconds and he seems confused.

In occupational therapy his work improved rapidly and in great contrast to his school work.

PSYCHOLOGICAL TESTS.

The psychologist reports intelligence quotients of 101 on December 9, 1924, of 91 on August 1, 1925, and of 84 in December, 1925.

In the Stanford Revision tests he fell below the level of his general mental average in vocabulary and was superior in reasoning power and imagery.

With performance materials he showed superior abilities as before reported and he did unusually well with the Witmer form board, cylinders and the Dearborn test. Association time was within normal limits but there were many associations according to sound and some peculiar reactions. (See personality study below.)

In the picture recognition test of the Wells-Martin series he made a perfect score of 24, not reached by any of the other boys. The town-state test, on the other hand, was done poorly with a score of 14 (the highest score made in the group was 34). Sentence memory was good—score 6.

In the Downey tests his control in the slow test was better than that shown by any other of the group, and the maximum-optimum ratio was 1.44—score 3 (possibly there was writing difficulty).

The cross-out test was done promptly and accurately (two errors). Squares test also was done promptly (mean reaction 1.82 sec.).

In a test for attention there was a total of 33 errors, fairly evenly distributed (possible successes 90).

Tests for motor control—learning a coordinated movement—were well performed, with a mean of 16.5 successes for the first 10 of the trials (50 trials in a series). There was improvement with practice.

Reaction-time was short—205.4 s. mean of the first 20 reactions—series of 10—and 211.8 s. mean of the second 20. Variability was not great.

Control of the reflex wink was not good—1.6 mean of successes for the first 10 series (25 in series).

Learning of digits (number of repetitions of series of eight digits until two successive reproductions were made) was fair—the mean of 10 series was 7.8 repetitions.

Sorting experiments were done with excellent control. The time was short, both in "normal" and in "learning"; 75.6 seconds for the n-sorting and for the l-sorting 87.6 sec.

In a test of effect of anticipation on estimation of time his estimate of an interval of 15 seconds was close—14.2. The estimate when pleasant reaction was expected was 12.8 (reaction starting a motor) and when unpleasant reaction was required (releasing a lever against a glass close to the eyes) the mean was 16.6.

In the Binet suggestibility test (lines) the reaction to suggestion was slight. Line VI showed increase, and slight increase continued to line X.

In the ethical judgment test, in no instance was the judgment "no punishment" made; beating was mentioned many times—20 times in 70 judgments. He said that at home he was not whipped but when he was bad he was not allowed to go out.

PERSONALITY STUDY AND ANALYSIS.

A personality review brought out considerable evidence of feelings of insecurity or inferiority. There are many indications of timidity. He says he is afraid to go out at night since his sickness; he sometimes covers himself up in bed for fear of shadows; he becomes afraid in a crowd on the street if he is pushed; he can't climb up high, do dangerous things or play on a football team because he might get hurt. After he was beaten he was afraid to go near the house where the big boy lived and was also afraid to go to bed at night. He hates to go to the dentist and is afraid of policemen and detectives. He likes kids that don't get mad. In the hospital he was rather sensitive to physical hurts.

He has a poor opinion of his own physical and mental ability and especially of his ability to learn at school. In the presence of girls or of strangers he is bashful. He thinks things will come out wrong because he is not smart and not strong. He feels he is different from boys that haven't been sick and thinks that his whole family thought that he was getting dumb. The boys used to tease him, call him "dumbbell" and "sleepy." He has been in the habit of telling his troubles to his mother. His memory is visile rather than audile. His interests are in making and doing; he has indefinite ideas of what he is going to be when he grows up but speaks of his present interests in basket weaving and he also likes to raise flowers and sell them, and is also interested in Sunday school; he has shown interest in any mechanical devices.

He is sociable, likes to be a leader and to help control the other boys and show off his superiority. He likes to wrestle and roll the other boys around.

The first association test showed a strong tendency to rhyming. This was not apparent in a second test. Ten affective words had a mean reaction of 2.30 seconds as compared with medium words with 1.26 seconds and with indifferent words with 1.60 seconds. Another record gave 3.51 affective, 3.20 medium and 1.76 indifferent.

He reported some interesting dreams.

He dreamed that he had his Sunday School pin in bed and it stuck him in the hand.

He dreamed that he wondered why they couldn't have a door with a catch on it that would stay shut. Someone came up and fixed it so that you have to turn a knob.

He dreamed that he had eight teeth pulled and it hurt. (He hadn't been to a dentist yet, and dreaded having his teeth out.)

He dreamed that if he and another boy were good the nurse was to give each of them the key to the door.

He dreamed twice about going over to the swimming pool.

He dreamed at home that all the kids were going out snake hunting—he saw a copperhead and the snake started to chase him and grabbed him by the heel.

He dreamed the boys all had their flower boxes made and he had forgotten one thing and his was different from the rest, one nail was missing. He put the nail in and then his was just like the rest. They put the dirt in, planted the seeds and the seeds began to grow as soon as they put water on them.

He dreamed he was in the workshop cutting out an elephant and a big elephant came in and picked up his elephant and went out with it.

He dreamed he had a flower garden—there was a rose bush, he was tying it up in a bundle and it stuck him and he woke up.

He dreamed that his sister made candy and left it in the pot and it got hard, it stuck, and had to be boiled over again, then it got too much water and never got hard.

SUMMARY.

A good boy of good family in a good home was taken ill with influenza at the of age of six. For two months with this acute illness there were vague hallucinations and fears and a slight tendency to drowsiness was in evidence after apparent recovery; for a year he went to school and behaved well and then drowsiness increased to a very noticeable degree with considerable disobedience and a falling off in his work at school. At the age of nine he was beaten by an older boy and from then his behavior changed decidedly for the worse. Neurological examinations at ten and later showed neurological findings that would be consistent with an earlier encephalitis.

Observation of a year during the age of twelve in a class at the hospital established the existence of a strong feeling of inferiority and visual-psychic disturbance. His intelligence quotient has gone down from 101 to 91 to 84.

Training in the hospital class for a year has greatly improved his behavior but has not been able to get him ahead very fast in school work, which is hindered by his visual-psychic defect. He will soon be sent home on trial.

PIETRO.

Pietro was born January 2, 1911, and entered the hospital class December 7, 1924.

The family history is good.

The patient's birth was normal and he walked at 15 months and talked at two years. At seven months he had an abscess in the back of the ear. He had measles when he was a baby. At five years of age he fell and received a laceration of the scalp which required two stitches. At the age of three he was taken to kindergarten and at six first to public school and then to parochial school. His school work was good and he was regularly promoted, reaching the fifth grade. He says that he liked school, especially arithmetic and history. He didn't play much on the street because he helped his father in the park. He liked to play with big boys and used to smoke a little. He was interested in automobiles and knew a little about them. He slept alone but there were boarders in his room. He

thinks his father scolded him a good deal before he got sick and once in a while he whipped him but not much. He also says that before he was taken sick he used to shoot crap on Sundays with nine other kids and that the police used to chase him.

Up to the age of 12 he was a good quiet boy who got along nicely with other children, ran errands, was a great help to his mother and never caused any trouble. He slept well but was rather afraid of the dark. His mother said that he began to "stutter" when he was about 11.

On February 28, 1924, when he was 13, he had a frontal headache with some nausea. He continued to go to school but did not feel like playing with the other boys. Some days the headache lasted all the daytime, sometimes only half a day, but it never disturbed his sleep. On March 21, the headache became more pronounced, was dull and continuous and seemed to spread laterally. He had difficulty in keeping awake at school and in the daytime at home but could not sleep during the night. His appetite continued good but after taking food he felt nauseated but never vomited; this condition lasted till April 1, when he developed double vision, ringing in his ears, needle-like pains especially in his right ankle joint which were made worse by walking. He continued to go to school until April 5, when his vision was found to be so poor that he was excluded and sent to the medical ward of the Pennsylvania Hospital.

Pietro remained in this hospital six weeks. On the first day it was difficult to awaken him but he answered questions intelligently. He stuttered. There was slight twitching in both arms and fingers and the left side of the face seemed more full and relaxed than the right; the pupils of the eyes were small and did not react to light and accommodation; there was a moderate rigidity of the neck and the patient complained of pain in the popliteal space; knee jerks were greater on the right than on the left; Kernig sign was positive on both sides, and on persistent testing a positive Babinski could be obtained in both sides; the patient complained of slight pain on percussion; there was loud blowing systolic murmur but no thrill. The spinal fluid at this time was negative to the Wassermann test; he had a cell count of nine; the Wassermann of the blood was negative; Widal was negative. His drowsy condition continued until just before his discharge. Three teeth were extracted during his stay in the hospital. There was neither ptosis of the eyelids nor diplopia.

After his discharge from the hospital he was referred to the out-patient mental clinic where electrical treatments and massage were given during the months of May and June, 1924, and he was urged to spend as much time as possible playing in Fairmount Park. From the time of his discharge from the hospital apparently he became more or less disobedient, and more or less unmanageable at home. He refused to help his mother. In the fall the teachers complained of his conduct at school and he began to go out in bad company.

On Sunday, November 23, he was playing with some other boys, broke into a newsstand, stole lemons and candy, and damaged the roof and lights; he was arrested and had to pay his share of the damages. The judge

declined to excuse him on the ground of his illness. Pietro was inclined to talk lightly about the episode of store entering and said that he was told that it was an empty house, and he only took a little while the other boys took much. At other times he says he went into empty houses to play with the gang; they would go in to find copper. He separates clearly his behavior before he had encephalitis and after it, saying that before his illness he would do what his teacher said and told his father every time he wanted to go out, but that after it he would "holler" at the teacher, eat candy in school, run away from home and stay all day. He thinks a great deal of his trouble was due to his father giving him more privileges due to his being sick. He says that he used to hit the teacher and would hit other people when they would call him names. On the whole he thinks he has had a better time since he was sick. The other boys treated him as they did before; he is not unhappy; and his mother let him out when he wanted to go.

On November 25, two days after the trouble at the store, a test gave him an Intelligence Quotient of 93.5, basal year 12 and upper limit 14.

He was admitted to the children's class on December 7, 1924, when he was 13 years 10 months old, the oldest of all the boys. During the first month his behavior was fairly good; he was somewhat restless, noisy, and bossy; he applied himself well to school work; and gained three pounds in weight.

By the Stanford Revision his Intelligence Quotient on admission was 87 and his mental age 12 years 2 months. Performance and other tests gave him a rating beyond his years.

There was not evident much pressure of psychomotor activity. He didn't talk a great deal and his muscular activity seemed usually to have a motive. He was argumentative and fought occasionally but he got on well with the other boys when there was supervision; he was interested in everything that was going on. There was little evidence of mood disturbance except at the times when his sore points were touched; he got angry when any reference was made to his being a "wop" or when anything was said which reflected upon his mother. He possessed some insight; he said that since his sickness he has been "badder" but he ascribed this to the fact that his father has been more lenient with him. In general under supervision he has made a very good leader for the boys and has set them a good example by going directly about his work and by being willing to help others.

A physical examination showed a well developed and well nourished boy with a good posture.

Neurological examination brought out an initial hesitation of speech which was said to date back to early childhood. He is right handed. His muscle strength was good and his cranial nerves seemed entirely normal.

Blood Wassermann was negative; blood count showed nothing unusual nor did blood chemistry. Urinalysis was negative. Basal metabolism reading was once normal and again — 6 per cent.

This boy began to gain in weight and in the six months of his stay gained 13 pounds. After two or three months his argumentativeness seemed less but this was possible because he was getting to be the acknowledged leader of the group. He boasted a great deal about staying out all night with the gang at home and during all his stay his memory of his gang activities seemed foremost in his mind. He seemed very well satisfied with the hospital conditions, retained his interest, showed special dislike for some articles of food, cereals in particular. His behavior was always markedly worse when the nurse was out of the room. About the middle of his stay he tried to get another boy to come in bed with him and the night nurse made him stand in a corner, where he cried. As a first prize in behavior he was taken out for an automobile ride but kept asking the chauffeur to "speed her up. Heck, this car doesn't go fast enough. If I had a car I would drive 60 miles an hour."

Observation of him in the occupational therapy class during his second month showed him first working industriously and whistling, stopping to talk about his work and show it to someone else. There were no excess muscle movements noticed. When a newspaper was put down for him to work on he stopped to read the "funnies" in the paper but went back to work in a minute or two. He told another boy to shut up; stopped his work to look at a squirrel and began to walk about snapping his fingers. He began to ask the teacher to admire his work and to criticize the colors chosen by another boy. He finished his work and began pulling rhythmically a cord braided to a chair, whistling again. When the teacher came to give him some instructions he stood very quietly. He has used tools intelligently, has done good work, and has been willing to help others. He was always the first one to start work and often the first to complete it.

He did well in school, liked to read and was especially interested in history and geography, apparently responding to what was ancient and far away.

After he had been in the hospital six months his family removed him against the advice of the physicians. A follow-up note is given below.

It had been noticed in his hospital behavior that he showed traits that were both good and bad. He became the leader of the group in the hospital and the feature of his home environment that he talked about most during his stay were the activities of his "gang." His behavior also showed sensitiveness, resentfulness, revengefulness and temperament during the six months of his stay. He was rather generous at times.

At the end of his stay he was not much changed in regard to his desire for the exciting life of the streets.

His Stanford Revision test has been recorded above, Intelligence Quotient was 87. Performance tests averaged 15 years. Picture recognition was done better than average adult. Learning eight digits was well done, an average of 4.2 repetitions for a series of ten. In the Stenquist Test III he made a score of 100 and in Test I a score of 82 (for his age 97 per cent). In a test for suggestibility for copying lines his was normal. His score

in the Downey speed test was seven. An attention test was well done. The wink reflex was controlled but not completely. In the pendulum test for learning coordinated movement he made the best individual single score (42 out of 50) of all of a group comprising the children in the hospital and six school children from outside. The learning curve was normal. The reaction time was about 20 seconds faster than the next fastest of the group. In a sorting test the learning curve was fairly even and he made the best record.

His interests are of driving nature, with a craving for active and exciting life. He wants to be a sailor; would like to hunt lions. He likes "scarey" things because you can get some fun out of them and so he likes to bother the policemen. His gang used to fight with stones. He likes to do hard work.

He said he was good before he got sick but not afterwards, that his father's relaxed discipline was bad for him. He has few fears. He admits having some fear of his father but he said his father only hit him when he deserved it. His feeling towards his father came out unexpectedly in the course of an ethical judgment test. When asked what the punishment should be for anyone who ran away from home he replied, "Whip him, no nothing, because I did it. If your old man hits you, what is the use of staying in the house." He said his mother was very good to him. He intensely resented anything said against his family especially against his mother. His reply to the question "What is the right punishment for one who would strike his own mother?" was, "Oh, he should be killed, should be hanged, be chopped and burned, be put in an electric chair about five times after he is dead." The punishment for striking one's sister if she refused to give him some of her candy was, "nothing, I often do that." He feels bashful when ladies are around.

The tests of ethical judgment were mentioned in part just above. For 31 offences he thought there should be no punishment; these offences ran from forgetting to wipe one's shoes before coming into the house to setting fire to a house when the owner had lied about him; they included cheating in a game, helping someone to hide from the police, truancy, playing crap, breaking windows and picking a fight. He replied to most of these, "Oh, that is nothing, I used to do that."

Association tests brought out little.

He dreamed once that he saw outside of the window two big men who used to steal boys and eat them. He dreamed about another man who tried to shoot some birds which refused to sit still and finally caught one and wrung its neck.

In conversation he laughed about the episode which brought him before the court. He said that a boy 14 years old proposed going into the store and said that it was an empty house.

Seven months after the patient had gone home the mother was interviewed with an interpreter. She said that there was not much change in Pietro except that he slept well at night and was not sleepy in the daytime. He didn't make trouble in the house and sometimes helped his mother

but he was always "ready to holler" if he did not get his own way and he did not like to go to school. The Sister who taught him said he was mischievous, would not study at home and ran about with a lot of bad boys. She said he has a good mind and could make a good grade if he would try. The mother said that she would like to have him come back to the hospital.

TONY (ABSTRACT).

Tony was born October 25, 1912, and was admitted to the class December 3, 1924.

The family history is complete and fairly good.

There were nine brothers and sisters who survived infancy, and up to the age of six Tony was picked out by his parents as the best one in the house. He was a good, steady, obedient boy; got along well with every one and never gave any trouble. He spent a good deal of time with books in the house. He started school at seven and got on very well.

Statements differ as to the time but not as to the general facts of the onset of his illness and of the change in his behavior. The oldest brother said that when Tony was six and a half years old he began to run up and down in a distracted fashion and when out on the street wanted to buy everything he saw. One night he awoke in a confused state and begged them to let him start for school or he would be late. He jumped and walked around excitedly. The doctor gave him some medicine and he slept for a week; after sleeping this way, he was restless, inattentive, uncontrollable and walked in his sleep.

Another account which probably has the date more correct, says that this illness occurred in July or August when he was seven and a half years old. Additional detail about the night attack is as follows: He awoke at 11 o'clock and called out to his father that the boys had gone off to school and had left him alone. His father explained that it was still dark but this did not satisfy him and he continued to cry during the night. At this time his mouth was turned to one side, and he complained of pain in the front of his head and smelled gas. At two o'clock next afternoon he went into a sleep which lasted for three weeks. During this sleep he rolled his head from side to side and threw his legs about; he had to be awakened for meals and at this time it was noticed that his eyes were crossed. "His jaw went to the left side and remained so during the three weeks." His eyes had always been straight before this illness.

A third narrative confirms the above, giving his age as eight, when he said he was going to die. As he became restless after the drowsy period, he was sent to the Children's Hospital for a tonsillectomy which produced severe hemorrhage.

When he returned home from this tonsillectomy "he started getting bad." He was restless, talkative, visited factories, put his arms around girls and asked for money, walked the streets at night and couldn't sleep.

Because of his conduct disorder he was brought before the Municipal Court (April 26, 1921).

He was sent to a protectory for a year and three months. He was brought home after he complained that other boys constantly fought him, but on his return he showed the same restlessness and had to keep moving even at meal time. There was no keeping him in the house and if the doors were locked he went out of the window.

He was in a special class at a general hospital from 11¾ years of age to 12⅔ years of age, but during that time he ran away five times. Physical examination at this time found the mouth turned up and out at the left side and teeth in poor condition, otherwise examination of ears, nose, tongue, chest, heart, abdomen and reflexes was negative. In the middle of this year (January 14, 1924) examination showed a reading proficiency of about third grade and arithmetic proficiency not better than first grade; his vocabulary was not better than that of an eight-year-old child; his memory span was seven in both auditory and visual fields; in reading digits he would reverse, in a series of 317 he would read 371; his mental age was not better than eight years six months largely because of little general information and narrow vocabulary. The report continues, "he learns readily, has good initiative, is accurate, retains well, has good coordination; but is highly nervous and excitable, and not able to stand the strain of any definite piece of work for any great length of time; his hands and lips tremble."

For two months after leaving the hospital the boy was in a protectory. He then came home, was restless in bed, could not settle down till midnight, was always hungry, and was involved in trouble with other children. He took fruit, toys and magazines from shops; ran about the streets; stood at the corners and acted as policeman, and rode all day on trucks with strangers.

He came to the Department for Nervous and Mental Diseases when he was 12¼ years of age, on December 3, 1924. He seemed rather pleased with the idea of coming to the hospital and for the first week was fairly obedient. The habit of snapping his fingers and tapping on the wall was much in evidence, and he was unable to assemble building blocks properly. During the next two weeks his defects came to light; he didn't like to do difficult things but tried to get out of them by whining, and gave up easily in competition; he got into fights and when he did, he bit other boys. Whenever he got into trouble he blamed the others. At times he kicked the furniture and kicked it again when reprimanded. With all this however much of the time he was fairly obedient and well behaved.

By the Stanford Revision Intelligence Quotient on the day after admission, his was 66. His attention was not very good at this time and he showed marked suggestibility; his answers were hasty and ill considered; his basal year was VII; he failed in all XII-year tests; in a vocabulary test he gave such definitions as lecture—electric chair; dungeon—engine; skill—skin; hysterics—going up stairs. Performance tests done a little later showed an average of 11 years 2 months, which was fair for his age. His ratings in school achievement tests, in reading, writing and arithmetic, were all about halfway through the second grade.

During the time of the mental examination the patient moved about constantly, snapping his fingers and trying his best to see what was being written. He stated that he was "afraid of ghosts and animals" except when he saw them in a cage. He is afraid of the dark, afraid that what he thinks of may come true; afraid to go to bed and hides his head under the covers. He saw a "black thing" in the house. "I get dizzy like and I think like of men fighting, in my head. I get so scared I cry." "Sometimes I hear something in my ear talking. It must be a fairy or something. I am nervous, my hands shake. I think of the boogie man and ghosts. The devil gets on my mind and I hit kids."

His weight is 74 pounds and he is 57 inches high; his musculature is fairly well developed and firm; he holds himself fairly erect; there is rather excessive hair over upper back and the beginning of development of axillary and pubic hair; upper superior cervical lymph glands are enlarged.

He is a mouth breather; turbinates are enlarged and the nasal mucous membrane congested. The tonsils have been removed but there is tonsillar tissue on the right. The teeth are discolored, and the central incisors are broken.

There is a right external strabismus and the right side of the mouth is slightly turned to the right; lungs and heart are negative; pulse is 100 sitting and standing; systolic pressure is 130 and diastolic 80; the abdomen is negative.

Neurological examination shows a right external strabismus and the drawing of the mouth to the right, as noted above. There is no nystagmus; no Romberg; no Babinski; no ankle clonus. There are restless movements of the arms and legs and fine rapid tremors of the extended hands and closed eyelids. Other reflexes are quick and lively. The strength of handclasp was 12.2 kilos right, and 7.75 left.

Urinalysis, blood chemistry, and blood counts are negative except that the number of white cells in the blood was 15,200 to 13,800 in the first two weeks and after six months 11,700 and after ten months 8800. Wassermann test of the blood was negative; basal metabolism was — 1.8; X-ray showed a large sella, anterior clenoid prominent, posterior hardly seen; there were large frontal sinuses.

There has been little change in his behavior from month to month. There is much of the time when he is quiet and fairly obedient and his restless jerkings are much less in evidence. He has had many fights with other boys, which were due partly to his own teasing and partly to taunts from the others. Near the end of the second month he bit another boy on the inside of the thigh so severely that the skin was broken. On another occasion he was accused of a sexual act with another boy. During this second month he broke a window, swore at the woman nurse, was noisy, disobedient and sent from the schoolroom, put in a corner, put to bed, and given neutral baths, all without any great effect. By this time he had gained five pounds in weight. By the sixth month he had gained 16 pounds and was getting into fewer fights. He continued restless, inattentive, lazy and sulky on some days and on others was pleasant and fairly

cheerful. As the year has advanced there has been on the average more pride in his appearance and more ability to stick to things.

In school there are the following differences between his work in January, 1925, and in January, 1926: In arithmetic he makes fewer mistakes and has a better grasp of fundamentals; he has learned long division during the year; in reading his expression has improved but he has no idea as to the meaning of what he reads; in history, geography and language he has learned more facts but he does not apply them; in spelling he has gained a year from fourth to fifth year work. As to his behavior in the schoolroom he first lost his temper very easily and would throw his books on the floor; he also had a peculiar habit of making rhythmic noises. During the year he has become much more obedient, his displays of temper are less frequent and milder, and he has made a conscious effort to stop his rhythmical motions, which has met with considerable success.

The occupational department reports poor comprehension and lack of perseverance, distractibility and bad temper; his attention always has been led easily to other boys' work, and he has never had any respect for his tools; he bragged about every piece of work he finished and he constantly beat a tattoo with anything that he could pick up. In the six months there has been no improvement in his tendency to handle things but he is less rude, and has learned to try over and over again. He has developed some group spirit and is inclined to help the smaller boys. He has done good routine work and has been very interested in gardening.

From the gymnasium comes the report that he was a willing worker who easily got tired and wanted to quit. He had improved some in his work and a great deal in his temper.

The psychologist reported a Stanford Revision test, seven months after admission when the Intelligence Quotient was 72, a gain of six. The basal year was VIII. He still jumped at conclusions in defining words, saying words having sound similarity as follows: skill—skin; ramble—camel; civil—silver. He seemed to think that the function of the President was to distribute seeds to the people and that he went about to the stores.

Picture recognition was good but attention tests gave poor results. In the Binet line test for suggestibility Tony showed the highest degree of suggestibility found in the group of children tested.

Putting these reports with the daily reports from the nurses and the psychiatric observation it is very evident that he improved more in the first six months he was in the hospital than he has done in the second half year. The last six months have been marked by a tendency to hold the gain he made during the first period but not to gain any more. After he had been in the hospital he was sent home for the Christmas vacation. There he kept running up and down stairs, couldn't keep still, was stubborn and acted like a baby. He teased the baby and this affected the mother so that she almost had a spell. He said that his mother did not love him when she said they were going to take him back to the hospital. It should be said however that all seven of his brothers and sisters were at home with him.

Studies of association brought out many peculiar low grade associations but nothing that would help to find complexes. Nor did the study of dreams get far; he said that he dreamed about ghosts and cowboys; that a ghost grabbed him and took him to his den; that two cowboys were shooting the nurse but couldn't kill him; that the nurse killed the other cowboy; he dreamed that his mother took him home for five years and he had to go to the protectory for five years. Apparently his dreams were of an uncomplicated type. When told he could go to the swimming pool, he dreamed that he was on a boat with his brother and that he kept slipping into the water.

He wants to get big and go to work "picking up steel." He likes to clean up the playroom, especially when he sees someone else about to do it. He frequently wants to do things which he cannot do, ordinarily he over-estimates his own ability. He says that he does well in school and plays well but he admits that his memory is faulty.

The ethical judgment test showed a fair degree of comprehension, but a tendency to suggest punishment of two or three classes—prison, whipping, bad medicine. In the ethical stories test he showed poor comprehension.

This boy is of inferior intelligence and has shown himself improvable and trainable to a definitely limited degree. His interest lies in coarse manual work. The open question is left as to whether his intelligence defect was native or acquired at the age of seven and a half.

Nicholas (Abstract).

Nicholas has been one of our difficult cases in whom a lower intelligence than usual complicates the behavior difficulty.

He was born November 22, 1914, and admitted to our group December 1, 1924.

There is nothing interesting in the family history. The boy has been under a stepmother since the age of four.

Before the attack of encephalitis Nicholas is said to have had double pneumonia four times, measles, whooping cough and scarlet fever. He never cared for his stepmother, was saucy and disobedient to her but got along well with the other children. He never liked to go to school and was often truant. He had encephalitis in January, 1921, and in September, 1922, he was hurt by an automobile. Apparently he was an ordinary bad boy up to the time of the encephalitis, and after it became an extraordinary bad boy with his behavior made worse after the automobile accident.

In the acute attack of encephalitis he was in a general hospital and when he went from there to a convalescent home he was uncontrollable, incorrigible. When he returned home he threatened to set the house on fire; stayed out at night; was disobedient at school; took his three-year-old sister out of the crib and swung her about by the heels; attacked his sisters; threatened to kill his father and many times was over-affectionate. He lied and stole; went about the house at night whistling and singing. In June the change in his behavior was tremendous; in a general hospital in June, 1922, his reaction was designated as "manic."

About this time he was given tests to determine his intelligence. His mental age was found to be five and a half years, I. Q. 65. He showed good persistence. It was noticed that the memory span was limited.

Following discharge from the hospital May 27, 1922, he was for a time at home. Here his behavior difficulties, it is said, increased. It was during this time that he was reported as trying to kill his brothers, showed marked sexual tendencies, stole, was quarrelsome and antagonistic.

During this year the sequence of events is not very clear in the history, but there is the record that on January 31, 1923, he was committed by the court to a farm school. He gave trouble there but nothing of a serious nature is mentioned. He was said to be difficult. The previous summary from the hospital gives the information that he was still restless, highly excitable, but improved.

On July 7, 1923, we find him at another hospital where, with other boys of the same type, he was under a more or less educational guidance. There he remained until June 27, 1924.

In September, 1924, after his discharge from the hospital, enquiry at his home elicited the information that he was regarded as incorrigible, that his parents were in constant fear of him, that he had been sent to an institution for delinquents.

He was received at our hospital on December 1, 1924, one of the two original members of the group. Here he has remained to the time of present writing.

On admission, physical examination was negative except for restless choreiform movements in the arms and to less extent in the legs and face.

Many different intelligence tests were given with an average intelligence quotient of about 72. There was a better record in performance tests, two of which were above his chronological age. There was considerable attention difficulty and hyper-activity.

In the hospital he was at first restless, noisy, and variable. He was observed on December 15 in an occupational hour painting a toy. He was readily distracted from his own work to see what others were doing; he talked a lot; stamped his foot when anything went wrong; dotted his shirt with paint; made movements with his mouth; scratched his head; sang; dropped the toy and got up on the table.

Nicholas was several times disinclined to come to the laboratory for his tests, but when he once arrived he was cooperative. In formal ways he was the most polite of the boys, always rapped at the door, insisted that the examiner go in first. He was usually smiling, sometimes mischievous, and exceedingly restless and over active. His excessive urge to activity seemed to present an obstacle to the taking in of impressions. He could not usually grasp a short series of digits, but occasionally he would reply correctly and promptly. A moment later he might be unable to repeat this series when it was presented again.

On January 5, it being suspected that his restlessness indicated the presence of chorea, he was placed in a ward under treatment in bed. He

remained until February 11, gained four pounds, and for a time seemed to improve. During the last week he became very restless, it was almost impossible to keep him in bed and he was returned to the group.

On March 13, he was reported as about the same as in the period following his admission. He appeared active, bright and cheerful, but was very restless and noisy. For a time following his isolation, he showed more excitability than before, his behavior was worse, and for the first time he was hard to handle in the experimental work. Although disobedient, his mood was usually merry, but he was inclined to be independent and was less polite than before.

There is another view of him somewhat later: he was reported as restless, lazy, lacking in interest, impudent, resistive; in the gymnasium he improved much in performance and also in willingness to work.

Summarizing the first six months in the hospital group we can say that this child's conduct has been bad but not vicious. It has been found that he can be handled best by giving him plenty of physical work and by persuading instead of driving him to do it. He shows more sportsmanship than he did when he was admitted. He has lost most of his choreiform movements. He is not bad but does bad things.

James C. (Abstract).

James C. was born July 6, 1914, and joined the group at the hospital January 18, 1925. He was discharged September 23, 1925, and readmitted January 5, 1926. He was an attractive, well-mannered boy, with gait and many of his movements awkward.

Family history was bad for alcoholism. There is a brother two years younger than the patient who has become a serious behavior problem. He had a serious automobile accident at the age of six and after this had hysterical attacks for six or eight weeks and was afraid of thunder; this boy is somewhat stubborn and affectionate.

This boy's early history was eventful: he had an instrumental birth; fell at the age of three after which he was unconscious for 24 hours; and had an automobile accident at seven which broke bones in his ankle. Up to the age of ten he was getting along fairly well in his studies in school but was getting under the influence of undesirable companions. At ten he had the acute attack of encephalitis and after this attack he seemed changed in disposition and his conduct became worse. But even before this he was regarded at home as a difficult child with many complaints; bossy, distractible, awkward, afraid of the dark, bound to run away. After the encephalitis all these bad tendencies were intensified: he was constantly on run-away trips, rode on trains, slept in boxes. He turned in fire alarms, begged on the street, lost interest in reading, took money from his mother's purse. His course in the hospital was marked by the usual disobedience and obstinacy and also by a tendency to fatigue quickly and wishing to be left alone. His moods were conspicuously uneven as was his conduct. He worried a great deal about his people at home.

Physically his small stature and delicacy of contour were marked; he had high blood sugar. His Intelligence Quotient was 100. The results of the other psychological tests will not be reported in this abstract.

The personality of this boy is unusual even for the group. He was sensitive, had a good memory, showed strong preferences, had a sulkiness and remoteness that might be called a detachment from reality. He was dreamy, imaginative, fearful and liked to be alone. He was always unsatisfied and insecure. He quarrelled much. The personality study brought out that in regard to his run-away habits he was on the defensive; he said that he at first ran away with a boy at the Catholic school at the other boy's suggestion. They were around the railroad and trolley car tracks all day. He said that some nights he slept on the wharf and sometimes was badly frightened by rats. He insisted that these trips were not for pleasure but that he was frightened, was afraid of the police, that he trembled all over on going home. He has never given any satisfactory explanation of his escapades. He says that he does not know why he runs away. He said once that he didn't intend to run away but that some boy would come along, whereas the history seems to show that he was alone on these trips. Once, he said, he stayed away because he was afraid to go home; he was afraid he might be put into the reformatory.

Some of his fears have already been mentioned. When he first came to the hospital his mind seemed to be full of apprehension about home; he was afraid his father might be burned tending to the fire; that his mother might be dead; that his sister might fall down-stairs and crack her head open. Once, he said he heard as if something told him that there was a funeral at his house. He seemed at one time to have some fears about magic; said that there should not be such a thing in the world.

He said that he was afraid at home in the night because thieves could climb up in the window and get him—to kill him or something, or kidnappers or gypsies might come. On one of his run-away trips, when he saw his aunt on the street he thought she was a kidnapper and started to run away from her. Another fear he had was about a painter who worked in their house. He was afraid that the painter would hit him, or throw some kind of paint stuff on him. There was another persistent fear at home. Every night he would hear something start to say "w-o-o-o-o." It seemed to be like someone trying to call out loud. He felt as if this man were sitting on the top of the bed singing. Once it seemed to him that the man was trying to kill him. He believes there was something really there. This happened, he said, before he way sick.

Analytical exploration was, we say, carried out in the conscious memories. Association time was unusually long. The means for four groups of 50 associations were: 6.40 sec., 6.74 sec., 7.24 sec., 5.23 sec. The mean time for affective, indifferent and non-affective words was 8.27, 5.75, and 5.16. There were many delayed reactions: habit—doing, 38.5; salt—ocean, 24; war—fight, 21.4; make—bread, 24; love—marriage, 41; dead—corpse, 19.6; blue—flag, 19; brother—friend, 19; cook—warm, 17.2.

James has a rich and lurid dream life, as the following samples will indicate:

He dreamed that his mother was dead—she chased him up the Woolworth Building, he jumped, then she jumped and was killed.

He dreamed that he was under a trolley car and a train came and smashed the trolley car and he was all crushed to pieces.

Robbers got him; he killed the robber king by cutting him up with a sword.

He dreamed that he worked in a gun shop. He was trying out a gun and got it backward, and it shot right through him. Then he was put into a box, put in the ground, he got out of a hole, a dragon came, chased him to a river. He went down to the bottom. They fished for his body, and found a baby. He saw a fish come. It had something like a sword. It was sticking its thing into him. It said "w-o-o-o-o."

He dreamed that he was let into a tree. There was a big hall there. The king said that he was to be punished. When he was 20 years old he would fall from the Woolworth Building while painting it, but would not be killed. They would think he was dead and would put him into his coffin.

He dreamed that a man took him in a flying trunk—the man was a magician. He made the magician angry, and the magician closed him up in a hall.

The connection of these dreams with stories he has read is obvious. In the dreams there is much adventure in which he is more or less passive. He is seized, led, run over and the like.

The sex history of this boy is but little known. There is one apparently important episode in which he and his brother, who is about two years younger, participated. The two children have told the story sufficiently alike to establish the main points. They were playing in the vicinity of the railroad, were accosted by a man who enticed them into a freight car, made the older boy perform *fellatio* on the young—threatened to throw them out on the tracks if they didn't do as he said. The boys tried to resist, and the man finally ran away, and locked them in the car. James climbed out of a window and let his brother out. This episode made a deep impression upon James. He said that he thought it was about five years ago, the first time he was away from home. He has been in the habit of thinking about this at night. He has had a feeling of disgust, thought he might have got poisoned by what he did, or from the man. He remembers the man as tall, and as having pimples on his face.

James disclaims having had any more such experiences—says that he has never performed this act again. In the hospital there has been little direct evidence regarding the sexual interests of this boy: He has shown an interest in being mussed about and sat upon by other boys. There was one affair in which James was said to have been the instigator in an attempt to play the passive part in *fellatio* with another boy. The nurse has suspected that he has an interest in enemas, he is said to have told another boy that he likes them, and he is supposed to have made wrong statements in order to receive them.

Later reports of James' conduct in the hospital were favorable. He made no attempt to run away; and from the gymnasium his work and behavior were praised highly; his school work improved very greatly. In the occupational class his obstinacy and lack of initiative were replaced by cooperation and willingness to try. He never succeeded in handling tools easily or well. In the garden he worked extremely hard but was erratic. He left the hospital on September 23, 1925, to go to a private day-school. At home he got on well with his school work and he gave no trouble to his teachers but out of school he began to act as before. One afternoon with his brother he took $40 from a drawer in his mother's room and spent $26 before three o'clock in the morning; it was also possible that he set fire to a schoolroom. He said that he felt melancholy; he found a bottle of whiskey and drank some of it; he ordered a taxicab to his house; he seemed jealous of his brother.

He came back to the hospital willingly; was obedient but rather argumentative with other boys; he still preferred to be alone and he said the head nurse discriminated against him. With no active effort he got out of breath.

In talking to us about his disastrous visit home he said that he did not know why he acted badly but that he was afraid of his parents; he thinks his mother loves his sister better. He ran away because an arithmetic test was coming which he knew he could not pass.

On January 7, 1926, James' mother went over with us some of the recent events, and supplied some of the background for the interpretation of the behavior. In school the only complaints from the teachers were that James was sometimes inattentive but not more than the average boy, and that he would start things and not finish them. At home he has been high-tempered and complaining; he cried nearly all Christmas day, and after being unable to finish his Christmas dinner he went out and bought hot dogs and soda water. For the past three or four weeks he had been complaining that his mother didn't love him. The mother cannot detect any especial circumstance under which the boy runs away, but seems to think that it is likely to be when things are running smoothly rather than the reverse. Once he ran away, however, when he couldn't have an expensive set of books that he wished.

No sex habits have ever been detected in the child. The mother has told him that it would ruin his health "if he touched himself." The boy says that his mother told him she would put him on a red hot stove and "would burn his thing off if he did it."

The mother admits having a high temper, that she sometimes becomes infuriated at the child's conduct and that she has beaten him severely, usually with a belt or strap, and that she did hit him with a crutch, the first thing she could reach, as he said. But, in general, she feels, she has been over-affectionate with the children. There have been strains in the family which have directly or indirectly affected the children. The mother is explosive, her anger is soon over, but the father is one who holds

grudges, may be offended and will not speak to the mother for a week. Recently he has been drinking excessively, but it is only very recently that his drinking has been known to the children. The father is about 18 years older than the mother. There has been in the past considerable family trouble over the father's mother. He has blamed his wife for spending money that was left to him. There are other points of strain between the father and the mother: the father is jealous, and there is more or less of marital incompatibility. An interesting, but troublesome, new development in this case, is that James' brother has now begun to show similar tendencies. Different in disposition in several ways, he has reacted apparently to James' influence but at the same time appears to have capacities of his own for delinquent behavior. He has been taking money, lies, runs away, and in some ways is regarded as worse than James. There is no history of encephalitis in this case, but there was an injury received when he was hit or run over by an automobile.

Since this account was written, James has again been discharged from the hospital, and his brother has been admitted.

GEORGE.

George was born June 23, 1913, and came to the hospital in January, 1925. Diagnosis was never completely certain, but by exclusion, and on account of neurological findings, especially 47 cells in this special fluid count, he was accepted as a post-encephalitic case. We have no history of an acute stage, and no reliable story of behavior before his appearance at clinics as a behavior case.

He was presented to our dispensary, with an unusually long history of behavior difficulties. He was a tall, thin, rather good-looking boy, slightly pale, having an expression that suggested some mental deviation. He cried bitterly at the prospect of being taken away from his foster-home, but a few minutes later had attracted attention by spitting over the rail upon the head of a physician below. This we found fairly represented George's mood changes, and his lack of adjustment to social requirements.

But few of George's relatives are well known to us, and most of those far from favorably. The father is dead. He was a delicate man who finally at the age of about 27 died from tuberculosis. He is described as a tall, thin, quiet man, sickly, working as a bartender, but irregularly because of his ill-health. He is said to have been born at full term, a large baby, but grew up a delicate boy, and had no teeth until he was eleven years of age.

The paternal grandfather is said to have been a hard drinker, cruel and immoral. The grandmother was a woman of good repute, hard-working, and it was with her that George lived.

The only other paternal relative who enters much into the history is a cousin, with whom George lived for a year. She was supposed to have been immoral before her marriage, a "dope fiend," spending her time in houses of ill-repute, once living for a year in Chinatown. She married a sailor.

George's mother was brought up by an aunt who always understood that she was mentally deficient. She lived for a time in a boarding house, came to the city, and was admitted to a home three months before the birth of her child. One account says that she behaved fairly well at the home, and another that she was one of the worst girls they ever had there, that she was flighty and nervous, dressed flashily, was unkempt and dirty, was disobedient and defiant. She was married when the child was nine months old, to the father. After leaving the home, she lived for a short time at the home of the paternal grandmother, but when criticized for her conduct she left, deserting her child, has never been heard from directly since, but at last account was supposed to be living. Once she was reported to have been seen in the company of two sailors, appearing dissipated and tired.

The history of George is too long to recount in detail. He was born at the "home" at full term, when his mother was sixteen years old. He was small and emaciated at birth, delivery was instrumental, he was bottle-fed. After his mother left he was cared for by the grandmother, but when he was thirteen months old he was taken by his father and placed to board with friends, and about a month later application was made to a society for the child's support.

Not very much is known about the first five years of George's life. He seems to have been returned to his grandmother, and it is said that as long as his father lived he was under good control. The only other important item in the history up to the sixth year is that in 1918 he had influenza, and is said to have been very sick. We might think of encephalitis as having occurred at this time, but the fact that there is a picture of George taken when he was three showing him as already crosseyed, interferes somewhat with this theory.

However, sometime in 1919 it was reported that George was getting out of hand, and that it was only during the preceding few months that he had become bad. There was application for help in the care of him and from that time on the history of this child is more detailed.

At this stage George had now reached he is described as tall, restless, continually getting into mischief, fighting. His grandmother had been taking him with her when she went to work, and he had made trouble.

He was examined at a clinic in September, 1919. Chronological age was six years and three months, mental age five years and six months. His memory span did not exceed four digits, he could not count to 13, failed in the comprehension test at the six-year level of the Binet test. He was scattered, his mind wandered, he had queer ideas, he was unduly affectionate. For a time he was under observation in a special school. He seemed hungry for praise and affection, scrapped with everyone, cried readily. He wanted to show off, became terrified when he thought a boy might attack him, did not stick to anything, was slow to "catch on."

At about this time George had made his reputation as a bad boy. He had been getting into bad habits, ran away, could not be kept clean, took things, acted strangely, and had become a serious problem.

A short time after the series of examinations just mentioned, George went to Ohio to live with his cousin, but preceding this he was three months in a public school, in the first grade. He was gone about a year, and when he returned was sent to school again, from September to December, 1921. All studies were poor, he had poor concentration, would not stay still, was regarded as a nuisance, but not malicious.

What had happened to George in his year in Ohio was never known, but there are indications that it was not a very profitable time. Once he said that his cousin taught him to steal, at another time that it was a boy, and that when he thought of this boy he had these bad impulses.

It could not have been long after his return to the city when his grandmother once more made application for help, and about the first of the year 1922 he was making a good deal of trouble, and at this time, it is said, real delinquencies began. He took things in school, and when they were found in his pockets he laughed. He took three gold pins from a girl's dress and sold them for two cents. He brought the teacher a gold watch that he had stolen.

There now began a new series of investigations and examinations directed towards solving the problem of what to do with George. On January 17, 1922, an intelligence test was made, and the intelligence quotient was determined as 91. The basal year was three and upper limit seven. In performance tests he did well on the whole.

Changes in George's situations and the various efforts made in his behalf now become almost too numerous to follow. He was being examined at clinics. A spinal puncture was made and this and other examinations eliminated the possibility of neuro-syphilis which had been a question.

He was now reported as telling wild and impossible tales, about lions and elephants he had killed and the like. He ran away from a home in which he was placed and was found on the street without hat or coat, and told conflicting stories. For a time he was in a house of detention. Again he was in a settlement house. He ran about the streets and stole. He told foolish stories in a boarding house where he stayed. He was restless and much on the move.

After much discussion and many examinations it was decided, in April, 1922, by the society which had George in charge that he be placed in a foster home, and a little later he was committed by the court to the care of this society. A good place was found in the country, and there George lived eventfully until he came to our hospital in January, 1925.

At first he was reported as doing well in his foster home. Conditions were favorable for a quiet life, such as had been prescribed for him. Soon, however, there appeared such items as: George told long tales that were not true; he did not seem to know what obedience was; he could not be trusted to do simple tasks; he had been in school and was sent home every day, was never still in the classroom, ate his lunch immediately on arriving; he used bad language.

By March of the next year, 1923, records were better. He had been taken out of school, was helping well at home, was getting on better with

other children, would still lie, but was honest. In June it was said that he was telling wild tales, and about this time he was suspected of stealing, he was supposed to have taken a diamond pin from the house and to have given it to a colored girl. A neighbor reported that he had taken a child into the woods and had beaten the child. The following month there came the complaint that he had cut a tire tube into bits, and that for two weeks following a visit to the city he had been wild and unruly.

In September he was tried in school again, but his conduct was exceedingly bad, both in school and elsewhere. He would come home in a state of dilapidation.

In February, 1924, the reports were again encouraging. He had improved and was in good physical condition. Later he was said to have been very good and helpful at home during weeks when the foster mother was ill. In the fall he had passed a wonderful summer, had been on many trips, was happy. But whenever he was out of sight of the foster mother he was likely soon to be in trouble. More very bad conduct was charged presently: that he was smoking in the woods, he frightened a woman, was quarrelsome with children, was telling yarns. There had been some effort to teach him at home, but when anything was hard he would sit and look staringly, and he could endure, it seemed, only about 15 minutes of mental work.

In the late fall there was conduct of a serious nature. There were three woods fires, and George had admitted finally that he had set them all, because he wished to have some excitement.

In January, 1925, George was up again for examinations. He had improved physically except for the fact that a heart murmur had appeared.

Physical examinations were mainly negative. There was weakness in both external rectus muscles. There were irregular jerkings of various groups of muscles.

George was given a variety of psychological tests during the first weeks of his residence at the hospital.

Summarizing these tests, it is clear that there is no deficiency in intelligence.

George's behavior may best be described in terms of excerpts from the reports that came in during the first weeks or months. He was disobedient, but not usually flagrantly so, protested a good deal, told what he would or would not do. He seemed to think that his own pleasure could decide everything. He told tales on others. He bragged about his exploits. In playing he tended to have no regard for others. He showed love of excitement, liked wrestling and roughness. He was very sulky much of the time, scowled habitually but would smile brightly if pleased. He was noisy and loud. He interfered with others and was interested in others' affairs. He was aggressive towards the smaller boys. There were spells of anger, many quarrels. He seemed to take pleasure in causing others to be blamed, he did himself what he would complain about in others. He promised, and would break his promises, and was prone to explain things away. He told wonderful stories. He frequently cried when outplayed. He squealed

on others. He would peep through keyholes. He did not play fair. He seemed willing to work most spontaneously when he was doing something that someone else wished to do. He was insolent and sulky when not given his own way. He tried to impress others with his sincerity. He did things with apparently no thought of the possible results. He was ill-natured. He was evasive, very untruthful and he cursed.

There were other traits besides the behavior that were conspicuous. He was exceedingly restless; his body was constantly in motion. Motions were quick. He was very impulsive. Attention was flighty. Moods changed rapidly. He would become greatly excited. His interests were nearly all centered in some form or other of exciting activity. He has shown fear. He was afraid of an older boy and of "dark closets." There seems to be a reaction of fear when he is caught in mischief. When he swallowed a nickel he was panicky. He was suspicious, seemed to feel that no one liked him, was antagonistic towards some people.

The reports of George's conduct from the different departments were all the same with variations incident to particular opportunity for misbehavior. In the school, he showed quick temper, lack of concentration, unreliability and untruthfulness. At first he would do nothing as he should, sat on his desk, was impudent, talked much, annoyed others. He would take other boys' things, throw things at them and hit them. He would cheat. He would sometimes scream and pound on his desk. Several times he wrote obscene words.

His worst faults as seen in the occupational department were his stubbornness and meddlesomeness, selfishness and boastfulness. He had no regard for the rights of others. He took what he wanted. He was something of a bully. He would strike boys smaller than himself. He worked too fast, cared nothing for the quality of his work. But he was enthusiastic, and willing to attempt anything. He was interested in using tools of any kind, and was always begging to make guns, pistols, bows and arrows, etc.

In the gymnasium his outstanding fault appeared to be his tendency to criticize the other boys' work. His best quality was his willingness to do what was asked of him. In the music class he was restless, sensitive and quarrelsome. Prompt obedience was never noticed. But if someone else were asked to do something, he would jump to do it. He showed some pleasure in annoying others. He was babyish, might be sulky if corrected. Interest could be held only if he was performing individually or when there was an audience.

In the experimental work his behavior was peculiar. He was usually resistive about coming, didn't see why *he* should be taken, or *he* should have to go first. He always seemed to think his pleasure at the moment was what should dictate the program. He meddled incessantly with everything within reach, despite many reprimands. He said he didn't forget, he just wanted to do as he did. He was jumpy, restless, sometimes he seemed suspicious, and was afraid he might be regarded as inferior or mentally deficient.

Not much headway was made in studying George by any methods that required his cooperation. He was averse to reviewing his history, made conflicting statements, fenced against close inspection of his behavior difficulties. In conversation he appeared superficial, and impressed one with the unreliability of his statements.

George's best adjustment so far has been to life in this small group in a hospital. He has not been grossly disobedient or resistive, and when protected so that his propensity to foolish and impulsive acts could to only a little extent be expressed, he began to lead something like a normal life.

At the time of the present writing, March, 1926, George is a much improved boy. Everything considered he has probably shown more improvement than any other member of the group. He has made one visit to his foster home, and behaved well; he was closely watched, however, and he had little opportunity for doing anything very bad.

In a year or so George has made considerable progress in school, although not the normal amount. Spelling shows slight improvement on the achievement scale, but his spelling is still imperfect for Grade II. Reading also has improved a little, and number work also. His writing is satisfactory, language work not perfect above Grade II, but there were successes through Grade VI. Geography was mainly correct for Grade III, but mainly failed for Grade IV.

The I. Q. in the previous test, on January 15, 1925, was 87.

Latest reports of George's conduct are favorable; he has improved much in some ways. He has more of a sense of sportsmanship, takes more interest, is less promiscuously active and restless. He has gradually assumed more leadership in the group, and it is very probable that his improvement has to a large extent come from his increased sense of the security of his position. He has shown apparently genuine efforts to be better, has profited much by his association with a very wholesome minded and manly nurse, who has taken a great interest in him. There are some discouraging notes, and it is recognized that the reality of the improvement must be tested in an environment in which George has more scope for taking an initiative, but George is a better boy in all appearances. Running over notes since October, we can see that he is still restless, argues, is excited, annoys others some, shows vanity, seems sometimes to show animal-like qualities, becomes snarling and disagreeable. But these undesirable traits are less in evidence than they were, and George is leading a normal life full of interest—under protected conditions.

Tom (Abstract).

Tom was born February 28, 1915, and is the youngest of four children. He came to the hospital on March 12, 1925. He was an attractive, normal appearing boy, well formed and muscular, but very small, had blue eyes and high color. He seemed bright and animated. His fighting disposition was responsible for his coming. He was unstable in his emotions, disobedient, quick to resent and to resist. He entered school at six, and did well especially in reading.

Evidently he was always an emotional child, was always restless, sensitive, and even before his illness was much given to wrestling and fighting. He was impulsive, would sometimes take a stick and hit children, but his mother was not aware that he had a very bad temper. He was always affectionate: if one looked sad at him he would do anything for one. He had been most affectionate with his mother, and she admits that he is her favorite child; but she protests that she has not spoiled him.

The history of his illness is this: He awoke one morning in March, 1922, with eyes crossed. A few days later he became extremely nervous, quivered and twitched. These symptoms became more pronounced, he could not sleep, he "fought all night with the pillows and bolster." He was continually smacking his lips as though eating something. He was very restless; his feet and hands were constantly moving. He talked to himself; imagined that people were after him.

In June, 1923, Tom was admitted to a general hospital. There he showed choreiform movements, had an irregular left pupil, there was a slight internal strabismus and suggestion of nystagmus on looking to the right. He was nervous, hallucinated. There was a systolic murmur over the apex. A diagnosis of epidemic encephalitis was made at this time.

A little later, in October of the same year, he was received in the children's ward of another hospital, and there a diagnosis of chorea and mitral disease was made.

The behavior of this child, following his sickness, is not very readily pictured; that it has been bad, there is no question. The mother has not admitted that he was so very hard to manage at home, or that his temper was at all extreme; but the fact that she has worked and an aunt has had most of the care of him when he was at home is to be noticed. At home he slept poorly, wanted to be on the streets constantly racing about. He picked up cigarette stubs and smoked them. He cried often, his feelings were frequently hurt, he was inclined to be destructive and never took care of his toys. He was restless, mischievous, would "hop" wagons. He would not "stand any fooling." There was nightly enuresis. But there were also many good qualities. He was generous, would "part with anything." "He was kind and thoughtful." If disobedient he was soon repentant. If punished he might tell his mother that he was done with her forever, and then would say he was sorry. He was very fond of animals, he would lead drunken and blind people across the street. He never stole, never ran away.

This child came to us for study and care on March 12, 1925, and has remained up to the time of the present report, March, 1926.

When examined here there was no cardiac murmur and no increased cardiac dullness. The only neurological sign was the reaction of the right pupil through a larger excursion than the left, and increase in size of the left pupil as compared with the right.

Mental age was eight years and eleven months and I. Q. 8[illegible]

These usual psychological tests leave no doubt that intelligence is normal although not high, that learning capacity is satisfactory, that there is good

control of coordinated movements. There was every reason to believe that this child would improve in school, provided behavior did not prevent adjustment to the conditions.

It was soon seen that Tom's behavior difficulties were very real. Over some months he appeared at the bottom of the list when the children were graded according to the sum of their behavior marks in the hospital. He has displayed an extraordinarily bad temper, great emotional instability in general and the widest swings from good to bad behavior. When resistive he was extremely bad, and would have fits of uncontrollable anger. He would scream, kick, bite and curse. He would yell, cry, stamp his foot and run around the room when asked to do something he didn't wish to do. He was impudent to his teachers, quarrelsome and touchy, often disagreeable, very sensitive about his smallness, would sometimes strike other boys without any apparent reason. He fought a good deal and would cry when he got the worst of it. He cried over little mistakes in school, and refused to do anything further. He liked to attract attention, was much of a show-off, even said that he was smart and cute and could make the others laugh. He was apparently not a very good sport, would take advantage of his small size, and he would tell on others. He made many threats. Sometimes he seemed to like to annoy others as by pinching and kicking under the dining room table. For brief periods he would be very good, he was extremely over-affectionate, was at times beaming with good feeling, and would often be singled out by visitors as an unusually attractive child.

There is considerable evidence to show that he has been affected much by the troubles between his father and mother. He sides strongly with his mother, says that his father doesn't care for him.

His distorted affections showed at first in a tendency to very excessive display of feelings towards people in the hospital. He would "like best" the person who was talking with him at the moment, insisted on calling comparative strangers father and mother, and upon kissing them goodnight.

It was quite evident that he was much preoccupied with ideas about his littleness. He said he was a "little shrimp," that he was about as big as Tom Thumb, that if anyone picked on him because he was little he would kill him, and the like. He had only partial insight into his behavior: he admitted that he did some bad things but he maintained that he was a pretty good boy. Again he said that he was bad but that he didn't like to be bad. He said that he didn't like to be little, that he was the littlest boy of them all, and that he was afraid of some of the boys. He would like to be big, because big people get money working, and big people can lick little children. He admitted that he was afraid of the dark and of a dark, closed room, also of high places, but could not recall any other fears. He said that he was not easily frightened, but went on to speak of other fears. He said he was afraid of doctors, of nurses, and of his mother. He was afraid of robbers and Turks. (He was apprehensive about the blood tests, about the apparatus, but on the whole has shown himself to be a courageous child.)

Something may be learned about Tom's improvement from notes made in July and August. On July 28 he was reported as fairly good, active, restless, over-affectionate, disobedient, quarrelsome, having occasional temper tantrums, fighting much, untidy at table, sulky, quick tempered, mischievous, distractible, petulant and whiney—inclined to tease other boys. Such improvement as there was up to that time was plainly a matter of degree; there has been no elimination of his main defects.

He was reported on in some detail, on October 23, by the charge nurse in the department. His worst fault, it is said, was his uncontrollable temper. He liked to show off. He was pouty, sulky and insolent. He would on slight provocation kick, bite, scratch and spit upon others. He would not stick to any one thing long. At the time of the report he had shown improvement. He seemed to be making an effort to be a good boy. He was taking a great interest in some of the activities, could swim and dive, was entirely unafraid in the water. He was still bossy and at times scrappy. He was still very moody and variable in his conduct. He expressed much affection for his mother, would save his pennies to give her. On the whole he had improved much over his former condition. At the time of writing there were few of the temper spells. He had also gained much in weight. He would usually admit that he deserved any punishment he received, and that he perhaps deserved more. He seemed to have learned that it did not pay to lose his temper. He seemed to be trying to be a good boy. He was much more agreeable, much less inclined to "squeal" on the other children.

Early in December, there was a depressed tone in the reports on this child. It was said that he was petulant, was scrappy nearly all the time and had not been good for more than a day at a time—although on the whole he was better. Later in the month he was "just the same—scrappy and petulant at times, and cheerful and sunny at others." He was no longer given to marked outbursts of temper.

On February 24 he was still having outbursts of temper but these were less frequent and less severe. He was still noisy, restless and over-affectionate.

CASE SUMMARY.

We see in this case the effect of an illness which affected the brain, superimposed upon a foundation of emotional instability, and upon the effects of bad family conditions, which in turn have had considerable influence upon the development of the disposition. There is possibly a direct hereditary factor. Intelligence is good, there is no lack of moral ideas, but he over-reacts. His emotional instability is extreme. Between his best and his worst behavior there is a great span. There is apparently no planned bad behavior. He is impulsive, and tremendously in earnest under the influence of any emotion that may at a given time possess him. There are some definite complexes that add to his difficulties; his inferiority idea relating to his smallness and his feelings about his mother, about his father's treatment of the mother, about his mother's hardships in making a living, and again his separation from his mother have contributed to his

difficulties. We should expect that he will continue to improve, but see that he is somewhat dependent upon a re-educative process which shall reach to the level of his essential difficulties, and still more upon a stabilizing environment in which his affections may be attached to permanent roots.

ROBERT (ABSTRACT).

Robert was born March 8, 1914, and came to the hospital May 24, 1925.

So far as we can determine Robert was a normal boy up to the time of his illness, but the evidence has never been regarded as quite complete regarding personality. He liked out-of-door life as did the other children of the family, had interests in common with his brothers and sisters, and did his share in the work of the house. He was generous and "just a mischievous little youngster." He was not sensitive, was good at home, asked for little. He was quiet, not impulsive, but active and somewhat happy-go-lucky. In school, so far as is known, his work and his behavior were good. First evidences of his illness appeared when he was in school. He became restless, went home, sang or hummed a good deal to himself, was more active than usual, did the other children's work besides his own. Then he began to sleep much. He returned to school after a week. Later he would go to sleep in school. Although the physician who attended him did not find the usual symptoms of encephalitis, except as just recorded, he diagnosed the sickness as that.

After this illness Robert began to show undesirable traits. He became more restless, was impatient, began to be irritating to other children. He was always teasing someone, especially the babies. He became disobedient, would get into a violent temper, threw things at the other children, though not viciously. He has stolen miscellaneous things, especially children's toys, such as wagons. He has shown a collecting tendency. No peculiar habits have appeared, no sexual tendencies have been observed. His affections have not changed. He is generous as he was before his illness. In school results are poor. He was restless, was considered queer, and a problem, but it was said that he could learn when he could get his mind on his work. He complained that the other children called him names such as "calf brains."

Robert was 11 years old when he came to the hospital. He appeared a normally developed boy, bright and alert, was pleasant and cooperative. He talked freely and easily, seemed interested in all his surroundings, appeared not to be concerned about leaving home and coming to a new environment.

Physical examinations revealed nothing that seemed clearly related to his encephalitis.

Psychological tests showed normal intelligence, and there was no sign of deterioration. By the Stanford Revision the I. Q. was 91.

In the hospital Robert has displayed several undesirable behavior traits, although the general trend in his conduct has been in the direction of improvement, and no grossly bad behavior has appeared. His own account

of his previous behavior is that he was sometimes bad at home, that he would go out when told not to, that he would easily become angry, that he would fight and the boys called him "calf brains." He said that his school work was too hard, that he was sometimes lazy. He said that he would fight with his thirteen-year-old brother. He remembers that when he had the sleeping sickness he could not sleep at night, but used to sleep in the daytime.

In the hospital, we say, no grossly bad behavior has appeared, but it was soon seen that Robert was not an especially manly boy. There was a decidedly scrappy attitude. He would tease other boys and try to annoy them. There were quarrels frequently for this reason. He would try to duck the smaller boys in the swimming pool. He has in fact been very irritating to others, is very argumentative and so mischievous that he has been in trouble much of the time.

There was much over-activity. He was reported as easily excited, as becoming so excited that he could hardly talk. He has sometimes been sulky, might cry if corrected, and at the least touch from others. He has been exceedingly over-affectionate, much given to hugging and kissing and he has tried to kiss other boys. He was strong in wanting his own way, but easily influenced for both good and bad. He has shown some desire to be the leader among the boys, and an inclination to brag about what he could do. Even in friendly scraps or wrestling he would lose his temper. He has sometimes been insolent, but not seriously so. He was reported as being vindictive, and somewhat of a bully; it was said that he had displayed fear of the larger boys in the group, but would fight with the smaller ones.

A summary from the ward, under date of September 22, refers to Robert's extreme restlessness and mischievousness, and his disregard of requests. (He had shown marked improvement in behavior, however.) He always wanted to be ahead of the others. If he couldn't be he would be pouty or sulky for a short time. He was not always fair in playing. At the time of writing he was still restless, but not so often mixed up in scraps, not so annoying, and was better behaved in the dining room. He has apparenlty tried hard to be a better boy. His habit of tattling had almost stopped, and he had learned to be more fair in play.

The later reports up to March, 1926 continue to include items about his crying, whining, over-affectionateness and especially his babyish or girlish reactions. He can't "scrap," likes to be flattered, throws a football like a girl, may call the other boys names and stick out his tongue. His personality faults remain. He cries many times over conflicts with other children. He argues a great deal. He is very egotistical. He seems not to take things seriously, and to think that everything is funny. At times he is very spiteful. When he was sick he showed lack of courage. In one recent report he was described as babyish, wilful, disobedient and fresh.

The main personality traits of this child have already been indicated. It is plain that his conduct is very closely connected with characteristics which must be constitutional.

CASE SUMMARY.

If there are two classes of behavior cases, divided somewhat roughly according to the predominance of the personality factor, we may say that this child is to a great extent a personality problem, despite the statement that he was a good boy before his illness. He was the "only cross baby" in the family. He is still a good boy, but is unstable emotionally, and is developing along the lines of his inherent personality in ways that produce unpleasing characteristics. His over-affectionateness is less becoming as he grows older and the pre-pubertal erotic element becomes stronger. He shows distinctly both physical and mental traits of a personality in which there is marked bisexuality. His social approaches are lacking in directness and force. He is underhanded, pouty, inclined to torment others, holds grudges and is revengeful. His illness has undoubtedly done much to accentuate his characteristics, has made him restless, more unstable emotionally, and especially may have had something to do with his erotic tendencies, but he seems to have been affected little by encephalitis in any direct way. We could assume only gratuitously a brain lesion which would be regarded as the direct cause of the behavior difficulties.

Sam (Abstract).

Sam was born April 9, 1914, a member of a family which provided some background for defects in the child. The mother's father was alcoholic, the father's mother is mentioned as possibly feeble-minded.

After an attack of encephalitis, in April, 1923, at nine, Sam was struck with a hatchet on the head but it is not known whether he was unconscious or not. Shortly following this accident he was sick. He became nauseated, his eyes were crossed. He was not in bed, but for several weeks he was more or less ill, and for a time had some fever. He appears to have suffered from drowsiness early in the illness, he would go to sleep in a chair. After he began to improve he would be taken to the physician's office, and would go to sleep on the way.

Directly after the illness Sam began to display behavior difficulties. He became untidy, he was restless, began to steal, he was forgetful, and in school he was continually talking. He would "fly from one subject to another," would go into houses and take things; he took money and spent it foolishly. Most of his pilfering was of a petty nature, but in December he took a purse containing $15 from a neighbor's house, and shortly after that his father had him sent to the House of Detention, whence he came to us, February 4, 1925.

In the hospital it was soon seen that this child had probably always been inferior, and that he was also deeply affected by encephalitis. He did not quite meet our requirements as to probable improvability and fitness for advancing in school, but he was kept until December 20.

In contrast with several others of the group this boy showed very plainly the marks of his illness. His face seemed lacking in expression, there was left internal strabismus, eyelids dropped somewhat, and there

was slight drooling. He was awkward in tests for adiadokokinesis, pupils reacted to light slowly, and through a small excursion. Tendon reflexes were lively. There was nasal obstruction and mouth breathing. Cervical glands were enlarged. His appearance was suggestive of mental deficiency. There was a suspicion of hereditary lues that was not supported by laboratory findings. Blood Wassermann was negative. Intelligence Quotient was 77. To verify this test, it was repeated after three months when I. Q. was 81. Intelligence was plainly low, but these results seem to establish the point that the child's behavior difficulties are not primarily due to intelligence defect.

On the whole tests involving learning showed better results than might have been expected from his low intelligence quotient.

Sam made less progress than any other member of the group. Behavior remained bad and of the same inferior type. A summary of him made after about six months of training was discouraging, although there was some improvement:

There had been gain in physical condition, and he had learned something, but it seemed clear that returns would not continue to repay effort. The latest note we have of him read: "Same old story on all of the questions, only perhaps more so if anything. Sleeps quite a lot on the floor. Sleeps well at night. Eats well as a rule. Still cries without much cause. He had been having bad effect on the morale of the group, caused others to get into trouble, had to be kept often alone, there was lying and stealing. He made many excuses and promises.

He was discharged on December 20, 1925.

CASE SUMMARY.

Sam is regarded as having been most deeply affected, of all the children of this behavior type, by the attack of encephalitis. There was probably constitutional deficiency, and several environmental factors contributed to the result, but in addition to this, encephalitis has greatly affected his conduct. With one exception his behavior has been the worst in the group, as shown by the daily behavior records. He seemed the least promising of the children, made the least progress. Intelligence is low, but not low enough to account for many of his traits. The physical signs of his illness remain; his face lacks expression, and it is possible that there is some chronic process, although the direct evidence for this is slight.

EDWARD (ABSTRACT).

The patient was born, according to the official certificate, March 5, 1914, which made him 11 years 1 month when he was admitted to the hospital class. He had been admitted however as an individual patient for observation six months before. There is not a very adequate record of his life up to the age of six but some very important things seem definite. After a normal birth he was breast fed and was a "fine, beautiful, perfect child."

He began to walk and talk at 14 months and cut his teeth at the usual time. He was playful and good natured, probably rather spoiled as he was the only boy with four girls. He had measles, chicken-pox, whooping cough and, at three years, pneumonia. In these years he was not more active than the other children of the family and certainly not more active than the oldest girl who has remained a normal and good child.

When he was six years old in the early part of 1920 he had a severe illness which is described only by his mother. She says that the illness began suddenly as Edward woke up in the morning saying that the room was full of animals and of people chopping wood. A day or two later he complained of pain in his head and had convulsions which lasted ten minutes; he was unconscious, his eyes were turned back in his head and his eyes have been crossed ever since. After this attack the patient was in a stupor for a week unable to take nourishment and constantly twisting and turning his body and limbs; his feet and hands were never still. A slow improvement began after a week and continued for the next few months, but during the ensuing summer he was easily fatigued and slept a great deal. There were no recurrences of the convulsions. His mother believed that the whole attack was caused by eating a quantity of dried tea berries. It should be stated that the tendency to sleep a great deal was evident for a year afterward; he would often go to sleep standing up. Also for some time after the attack some of the facial muscles were paralyzed.

As he entered school in the fall after this attack at the age of six the history of his behavior after the attack practically coincides with his school history. In school he was promoted after three days and apparently did fairly well for the first year; his mind seemed intently alert and active and he wanted to talk constantly. He learned readily and finished the year with splendid standing. However, during the winter he would often drop into sleep—in his seat, in the hall, drinking his milk, in the school yard, or on his way to or from school. At home he was over active. His parents were inclined to think that his sleep spells were pretended. His conduct in his first school year at home is not well differentiated in the account which will be given later concerning all his school years.

In the second year of school, at the age of seven, his work was unusually good and here he began to take books, pencils, victrola records, slip them under his blouse and take them home. He took any money that was lying around. In the second term he was transferred to another room and here he made his grade easily and neither his stealing nor his sleeping was in evidence. During the next summer vacation he slept soundly all during the summer mornings and had to be awakened as late as one or two o'clock in the afternoon.

In the third year of school at the age of eight he began to steal again. He was promoted in the hope that harder work would take up his attention but unfortunately quarantines made him lose time and he failed and was sent to a special school at the age of nine in the fourth grade where he was so much brighter than the rest of the children that his influence was

bad. His school work continued to be very good but he was all over the room. "He collected everything from money to nails and paper. If these things were found upon him he had a line of defenses to prove that he was innocent. If anything he took was taken away from him he showed a tenacity of a bull dog in getting it back, scratching, biting, screaming as long as his strength would hold out, when he would either seem to faint or sink down from exhaustion." The teacher reports, "After I showed him where he had scratched me he was profuse in his apologies and begged me to forgive him. I did, and he panted like a bird spent from beating its wings against the cage. He gave me presents which I afterwards learned he had taken from a store. I had them returned. He went to the store and demanded them to return the things to him; on refusal, he screamed and tried to get them. They finally put him out and he threatened to throw stones at the windows. They had to call the police. He is affectionate, courteous, always pleasant and shows designing worthy of a general but cannot be trusted."

He was talked about a great deal at school, and among the neighbors, and he heard that he was called crazy, but this only tended to increase his unusual actions.

All of his teachers advised that he be placed in a reform school.

During the school years the following difficulties were increasingly in evidence at home. He tore up his playthings to see how they were made; he took things from the neighbors who realized, however, his condition, and from stores in the neighborhood. Punishment did not check him; he had very plausible stories and as soon as one was checked up he invented another. He bragged about himself a great deal. He wanted something new all the time. From some of the stories he has told it has been conjectured that he may have displayed some tendency to cruelty to animals.

The parents describe him as a child who had marked curiosity and good powers of observation, who was very persistent and industrious in his own way, not caring much to play with other children—or at least not for long periods, a somewhat apprehensive child, sensitive, impatient, usually cheerful. He demanded much of everybody's attention, was balky, cranky and hard to control.

Edward was admitted to the hospital on November 27, 1923, when he was ten years eight months old but this was before the special class of boys was formed and he was treated as an individual patient on a ward where there were only adults. Under this admission he stayed two months. He accepted without question all those about him as friends. He investigated every part of the building. On two occasions one morning he had fits of temper when he was not allowed to play out of doors and on one of these he banged the door back and forth continuously for several minutes. During the first few days he had such attacks as the following: "He was sitting in a wheel chair and without warning slid off onto the floor; there was some twitching of the extremities and muscles of the neck. He recovered very suddenly." He had four of these episodes in one day; in them he responded to pin pricks, began to squirm and rolled off the lounge in such

a manner as not to hurt himself and began to crawl along the floor when some water was splashed in his face, then entirely recovered. His spells appeared usually when he was not allowed to have his own way. After ten days he became very mischievous, teasing the patients constantly and sometimes throwing food about. He swore and took other patients' belongings.

He went home and for two months got along very well with other children. During the summer however he began to steal again, at one time getting $14, of which he gave $7 to a boy, $3.45 to the gospel workers, $1 to another boy while he spent a little for ice cream and soda. During this summer he went to bed at eight and slept to 10 and 11 the next morning. He often lay down during the day to rest. The other children teased him a great deal and he cried easily.

He was returned to this hospital October 14, 1924, at the age of ten years seven months and remained in the hospital three weeks. During this period he was given a fuller program with frequent changes of activities. His behavior was a little better than on his previous hospital residence.

He went home over Christmas and did very well and on returning to the hospital he seemed much more amenable to discipline. He left the hospital but when home he got into as serious mischief as before, cried a great deal at school and never wanted to do any difficult work; lying and stealing continued to be his greatest trouble according to the parents. One day he left home at ten a. m. and returned at eight p. m.; during this time he entered a strange house, took a purse containing $13, bought a little car for $8 and spent $5 for trifles.

His admission to this hospital as a member of the class of boys took place April 2, 1925, at the age of 11 years. He was brought by his mother and was alert, restless, active, and impatient over any delay in getting to the ward. When he got to the ward he appeared suddenly to collapse, his eyes closed and his body was limp, pupils were normal and his eyelids moved when a hand was passed close to his face. When it was suggested that someone get some ice from the storeroom to give him an ice bath he said he didn't want one. He was seen by a physician just after this and cried saying he did not want to stay at the hospital. For the next two weeks his behavior showed no serious conflicts, he rather avoided the rough and tumble play of the other boys. He was often annoyed by the noises of the others, the buzz of the instrument in the psychologist's office affected him and he continually complained that he had to eat too much.

The examinations which are here recorded are a composite of all those given during his three admissions. He had a solemn face with an unscrutable expression, "a poker face." When he lies he does it with so much frankness and sincerity, not defiantly, but accusingly, that one feels brutal to suspect him. His expression is sometimes one of cranky obstinacy and at other times very sad; he smiles wanly but when he hears the music of his favorite "Nearer My God to Thee," his expression is as rapturously happy as that of an "angel child." He was interested during the mental ex-

amination and his attention was good. He showed unstable mood, changing from sadness to gaiety in a moment and from anger and fear to affection; he wanted to have a fuss made over him and to kiss the visitors that came on the ward. He has told the most absurd stories with the appearance of innocence. Many of his mental traits are better shown later by a description of his behavior in the hospital.

His height was 4 feet 1 inch; he was thin, feeble, pale, and his head seemed disproportionately large. His weight on first admission, November, 1923, was 45 pounds, a year later 48 pounds and seven months later was 46 pounds. His posture was poor; his tonsils and cervical lymph nodes were enlarged. There was a weakness of the extrinsic eye muscles and a slight strabismus.

In December, 1923, I. Q. was found to be 93. In a still later test, on February 1, 1926, the I. Q. came out 90.

COURSE IN HOSPITAL.

This record begins with his behavior in the class of boys when he was 11 years of age.

Much interest was centered in his eating habits. Emulsion of cod liver oil was prescribed for him and his food intake was watched. He rapidly gained 12 pounds in weight, an increase of 25 per cent. In five months he gained to about 63 pounds which he has maintained pretty well since. He continually objected to eating his meals, hid food as often as possible, put his finger down his throat so as to regurgitate. In talking over his difficulty in eating, he said that he couldn't stand the yellow of eggs, that he just hated some food, that it seemed as if he would vomit; he didn't like brown cake and used to dislike ice cream; he thought that if he could be left alone a day or two and eat what he pleased he would eat enough; but he said people wouldn't give him enough time to get his stomach settled; he didn't like cauliflower, the sight or the taste of it; he also disliked cereals and buns, the latter were too doughy; some of the boys at the table who made noises made him sick in his stomach. He also disliked codfish and herring and he said he had all these dislikes for a long time; he said that he thought of some boys that are bad who killed things; he said Leo, a boy at home, killed a cat and cut the legs off. At breakfast he would stop to whine and cry and eat less and less and say that his food was coming up on him; he cried before finishing many meals. One time he asked not to have to eat dinner, tippled over a chair, threw food on the floor, blew soup over the table, shouted and whistled. When he was found with bread in his pocket he said he didn't know the bread was in his pocket; he guessed Robert put it there when he wasn't looking. He said he liked fruit best, almost any kind of fruit, but didn't like grape fruit or apricots, or fruit all mixed together.

He told many stories about his powers and his father's wealth. Most of these stories were so improbable that most of the other boys did not believe him.

By August, 1925, he had become a fairly well behaved boy. His main difficulty was lying, spoken of above, and his obstinacy. The tendency to react strongly to any noise or confusion became less. He always cried when he wanted to attract attention or sympathy and he liked to yell to create a sensation; he always asked for a job and said that he wanted a man-sized one. When other boys would not play with him he threatened to get them in bad with the nurse; he was often very diplomatic in dealing with other people; argumentativeness was always in evidence; he showed his vanity whenever he was praised. As late as January, 1926, he was accused of a sex misdemeanor by the other boys but he denied it. He said, "Honest to God I don't know anything about it. Well I ain't the only one."

There has been a general trend towards improvement in all respects. The main behavior difficulties have been a sulky obstinacy and an exceedingly facile fabrication. He told on others very often, took things from them underhandedly and the nurses have never been able to trust him when he was out of their sight. On one occasion when he was taken down town to "toy land" he was very enthusiastic but expressed fear of the elevated train.

In school he was stubborn, impatient, talkative and egotistic. He did not work well with others; he showed good learning capacity, was original and could think things out. His interest was in arithmetic and reading but not in history or geography and never in games; he was always impatient and could never wait for his turn; on coming upon difficulty he turned to something else and was usually busy or he began to cry.

In occupational work he has shown very little attention to the quality of product; he works best alone; wants to be left alone and devise his own method; while he showed little interest in working in the garden he could work industriously, even going beyond his strength, when he was allowed to be alone, but the moment when an attempt was made to have him work with others he lost interest and became inactive.

Reports from the gymnasium say that he has no nerve and will not try anything that looks hard; he liked to show off. He was the only boy in the group who did not like to swim and the only one who could not.

We have regarded Edward as a child having unusual personality traits and some complicated tendencies and affective deviations which under different conditions might be subjected to a prolonged analysis. In the later months in the hospital, his main difficulty has been still his food aversion. This aversion seems to be in part a phase of his hyper-sensitiveness along æsthetic lines. He is inclined to make much of neatness and orderliness. He is very fussy and particular. He has been sensitive to noises, expressed strong pleasure on visiting another part of the hospital and seeing how nice it was. He complained about the school, thought it wasn't a "right" school, the desks were not regular school desks, they didn't use ink, there was no big blackboard, the teacher didn't have the right books.

Edward has a fertile dream life, which has not been much explored. He dreamed of snakes; there was a snake that had bluish stuff all over its

back like fancy stuff. There was a long snake that had three leaves on its back, and the dreamer cut the snake into three pieces, and another snake took the three leaves, put the snake together, put the leaves on its back, and then the snake came to life again. There were more snakes in dreams, a whole lot of snakes, and the dreamer killed them and chopped them up. There was a dream that he and his sister were in the cellar and a light globe broke. He was in the water, ships were there, and some man squirted water in his face. He dreamed that he was at home, was going to market, and two big negroes came out and got his sister. He went after them but couldn't find his sister, and then he went on a piece of paper to the end of a bridge. He dreamed that a boy caught a big whale, and made a house of it, and he and the boy got inside. There were other dreams also in which the mood appeared to be one of fear. So there is a strong fear trend in the dream life of this child just as there is in his waking life.

Edward's behavior curve has from the first had an upward trend. There are ups and downs but their regularity is not striking, and he has now reached a general level approximating 20 or B, and would therefore be regarded as a pretty good boy. A very recent report from the charge nurse says that he gets on pretty well, but "continues to be an old grandpop."

Patrick (Abstract).

Patrick is another recent comer. He was born December 27, 1915, and came to us October 25, 1925, with a history of bad behavior, but with no certain diagnosis of encephalitis.

Patrick was a good baby, developed normally, was loved much, and even up to the time of his illness was petted by his mother, who would take him on her lap before bedtime. He had displayed but little bad temper.

Three years before he came to us he had a fall in the school yard. That night he was restless, sat up in bed, and from that time began to "turn day into night." There was no acute illness, however, and the day after his accident he played about.

Behavior difficulties ensued, and the sleep inversion persisted. He was sleepy in school. He began to be violent in temper, so that it was almost impossible to control him at home. Several times he went away for treatment. In May, 1923, he went to a hospital, and remained there 16 weeks. In September, he was at home, but was soon sent to another hospital, where he stayed until June. Late in 1924 he was said to be improved; sleep was better and he was more normal in the daytime.

When at his worst, the sleep difficulty was very bad. He was restless, got up, washed himself, tore paper and the bed clothes, made and unmade the bed incessantly, said that no one could make it right. Bed wetting began. Peculiar motor habits appeared, such as holding his nose, and during the year preceding his coming to our notice, there had appeared a difficulty of breathing. He would blow and slobber.

The worst manifestation was his violent temper. His sisters began to be afraid of him. He threatened once to throw a knife, struck his mother,

cursed, sometimes took things, became untruthful. He would fight often, was excessively talkative. When sent on errands he might be gone a long time, would stop and talk to people, interrupted. He was dissatisfied, easily upset, pouty. He cried at the slightest touch. He was very impatient.

At the time of admission to the hospital, this bad behavior continued, and there had been no improvement in a year. He was kept in school, however, despite the fact that sleepiness continued.

He was regarded as physically well, except that he complained of pains in the head, had great sensitiveness of the scalp, and displayed frequently disturbance of respiration. He said that he once used to see double.

IN THE HOSPITAL.

Patrick's peculiarities of conduct were soon observed. Under any emotional stress he produced the respiratory phenomenon. He was hyper-sensitive to touch, very resistive and violent with anger or fear, or both, when excited. Then he might be ingratiating and over-talkative. Intelligence seemed to be good, but he was apparently unaware of the inconsistency and disadvantages in attacking and cursing one minute and then clearing himself by asking to be excused. He was a little shy and aloof at first, but soon mixed, and appeared usually happy. He was impulsive and impatient, quick to become angry, was meddlesome and inquisitive. He displayed generosity, at times was very good, and in general was either very good or very bad.

Physical examination showed a well nourished, somewhat fat boy, with good development of muscles, sturdy and erect, and conforming to sex. He weighed 53 pounds. Skin was very fair, warm and moist. There were some suggestions of rickets. The thyroid gland was somewhat enlarged. Tonsils were infected. The neck was full especially at the base. The chest was a little constricted just below the nipples. Expansion was good. Respiration was rapid and labored at times.

On October 28 his I. Q. was 105.

November 18, he came to the laboratory for the psycho-galvanometer test. He began to make objections, said the solution was cold, began to shove the electrode cups about, was resistive, cursed, tried to run out of the room, became uncontrollable.

On December 3 when questioned he had many complaints. He said that the boys teased him, made fun of him, called him Mary. He said that his mother was sick, that he didn't see her very often. He couldn't eat, he said, and when he breathed it hurt through his chest. He thought the boys didn't like him here. But he expressed some interest in the activities of the hospital, liked the workshop, liked the nurse. In school he liked best writing, reading, and looking at pictures.

He continued to show his hyper-sensitiveness to touch, timidity and resistiveness; there was considerable trouble about his food. Once when he was brought to the office to be measured he became resistive, said it was "dirty" to be undressed, developed one of his panics with breathing difficulty. (It was reported from his home that he was excessively modest.)

A summary of him on December 7 records that he is deceitful, vain, curses, is crafty, tries to avoid eating his meals, likes to do things he will be applauded for, but is much more obedient than formerly and in general improved.

In January the difficulties concerned with eating continued, and at the time of the present writing this has remained the chief trouble. He is a little lazy, is "snorting and whistling around" about as usual, is sometimes out of harmony with the gang, is interested in keeping on good terms with the nurse and is trying to be good.

Roy (Abstract).

Roy was born December 11, 1917, and came to the hospital October 3, 1925.

There was nothing remarkable in Roy until he was 18 months old. Then one evening he was placed in bed as usual and the following morning could not be wakened. He slept for a week, could be roused by shaking, but immediately went to sleep again. After this, he became wide awake, then began to be fretful, cried and kicked much, and nothing seemed to please or satisfy him. Gradually he grew worse and at the age of four he began to run away from home and would do things unnatural for a child of his age. He got out of bed on a hot day and was found standing on the slate roof without any apparent discomfort. He liked to ride on the spare tires of automobiles and would go many miles in this way. Growing tired of this he took to stealing and lying. He would take anything whether it was of use to him or not. He brought home a bank stamp from a dentist's office, took a watch and old coins from a neighbor. He entered a hotel a mile from home, took two canary birds, put them in one cage and sold them for fifty cents. He stole toys from the 5 and 10 cent store. He took rifles from a hardware store, flowers, a watch case, the Book of Knowledge. He took six dollars out of a girl's purse and spent all but 18 cents. Recently he had a pair of glasses and a kiddy car that he didn't account for.

Roy was regarded as a very affectionate child. He is said to mix well with other children in play but never does one thing long. He may suddenly leave a group and go away. He is very impatient. He has no fear, will climb high without hesitation. He will seldom cry when hurt.

A neuropsychiatric examination of this child was made at a clinic on June 9, 1925. It was there found that the patella reflexes were exaggerated, the right pupil reacted to light sluggishly, there was slight ptosis of the upper right lid, and some coarse, irregular twitchings about the right side of the forehead and upper part of the face, the findings as a whole leading to a tentative diagnosis of epidemic encephalitis. An intelligence test at that time gave him a mental age rating of three years and eight months, and from this the impression was gained that he was mentally deficient, since his chronological age was then five years. He was alert at this time, interested in his surroundings, but lacked judgment and capacity to

plan. He seemed to have little sense of responsibility. He was stubborn, hard to manage, emotionally unstable, and had temper tantrums several times during the examination. He was seen later at the same clinic. At that time he had started in school, but continued to have marked behavior disorders. He had become entirely irresponsible, seemed to have a contemptuous attitude towards his parents, and his brothers and sisters, seemed to have no appreciation of the rights of others, would steal and fight and when told that he had done wrong would laugh, and repeat the offence. A few months later it was said that the neighbors had demanded that something be done with the boy, and he was beyond control. The conclusion at this time was that probably Roy would become an institutional case.

Roy was examined again psychologically on September 22, 1925. His chronological age was then seven years and nine months, and his mental age seven years and three months, I. Q. 94. Memory span was: auditory six, reversed three, visual five. He repeated 16 syllables. Healy A was done in 1′ 50″.

One previous psychological examination needs also to be noticed. He was examined by the Binet test on July 7, 1925, and then was found to have an I. Q. of 103.

He behaved very well during his mental examination, except for marked motor activity. He had, however, already shown stubbornness on the ward. He was playful, shifty, turned his face away from the examiner. He was alert and answered questions readily but briefly and asked questions in return. He was cheerful, boastful, easily angered and stubborn.

There was not much to record during the first days of his stay, but in about a week he was said to be less obedient and harder to manage, likeable and untrustworthy.

Physical examinations were largely negative. He was slender, a trifle taller than the average and a little under weight. He was well built; general nutrition was fair. Tonsils were enlarged and cryptic, but not congested. There were no neurological signs, except ptosis of the right lid. There were no pathological vaso-motor or trophic conditions. Laboratory findings were also negative except for 67 per cent hemoglobin.

Intelligence was examined on October 9, 1925, by the Stanford Revision test. Mental age was now found to be eight years and I. Q. 98.

Roy's behavior improved somewhat in the hospital; at least he became more obedient. The first day he tried to convey the impression that he was "tough." He announced the second day that he would not eat any breakfast, said he never did, but he obeyed when ordered. He continued, however, to be the tough boy of the group. All the other boys seemed to be bad only through loss of control. Roy was more fundamentally bad, since he appeared indifferent to the rights of others and lacked affection. He was to some extent unsocial, was apt to wander away from the others, or be indifferent to them. He was more or less silent. He was extremely disobedient, would in general obey only when he was made to. There was little talk on his part about being good, except perhaps with reference

to going home. He took punishment with indifference, seldom cried, would do the same thing over again when corrected. He did whatever he wished to do regardless of requests. He lied, was scrappy, took things, was probably the aggressor in a sexual attempt, struck anyone with whom he had any serious trouble. He fought, and fought well, evidently took pride in bearing hurts without complaint, did not flinch when iodine was put into a wound. Both in the school and in the workshop he showed lack of interest and attention. In the occupation department he would work at something for perhaps ten minutes, then want something else. He was elusive both in the shop and in the schoolroom, would run away and hide, once climbed up the pipes in the schoolroom. His chief interests seemed to be playing "cops and bums" and making guns. He continued to be hard to manage, was selfish and unfeeling and could not be appealed to. The report of November 13 contained the item that he had developed a twitching on the right side of the face.

He was discharged from the hospital February 1, 1926.

Charley (Abstract).

Charley is a newcomer in the group. He came on January 6, 1926, at the age of eight years and five months. (He was born October 12, 1917.) The illness which was diagnosed as epidemic encephalitis is said to have begun in March, 1925.

Following his mother's death Charley, after an interval, was placed in an orphans' home, where he remained up to the time of his sickness. He is said to have been always a quiet child, never hard to manage, was very shy and never had much to say to strangers, had never been a bad boy. He seemed as intelligent as the other children. The only other items of importance are that he was knocked down by a runaway horse about a year and a half before he came to the hospital and was unconscious for about 20 minutes; that he had been in school in the first grade for two years and hadn't learned much of anything, and that while he was living at a foster home he probably had acquired some sense of inferiority from the presence of a younger brother, who was more attractive or alert.

In March, 1925, he became ill. It was first noticed that his eyes were crossed. He was sent to an oculist and then to a hospital where he stayed ten weeks. Next he was at a convalescent home, then later, in a children's hospital for two or three weeks, and following that he was sent for treatment to still another hospital. There thorough examination was made, including test of the spinal fluid. There is no report of the general examinations, and the spinal fluid and blood tests showed little of significance. There was no increase of pressure in the spinal fluid, cells were 10 per. cu. mm. Sugar was not increased, nor was the globulin. Lymphocytes were 90 per cent and polymorphs 10 per cent. Blood count showed, red cells, 4,710,000, white, 7700, polys. 61 per cent, lymph. 31 per cent, monos. 1 per cent, eos. 6 per cent. Hemoglobin was 80 per cent.

Following or during the sickness there had begun to be changes in the conduct. He became very restless, would play and talk all night. He appeared foolish and stupid, and grinned much. He became inattentive, distractible and disobedient. He had to be watched constantly, because he would not remain in the playroom or in any place where he was supposed to be.

IN THE HOSPITAL.

When examined in the hospital Charley showed restlessness, distractibility, and much curiosity. He turned his attention so rapidly from one thing to another that he would interrupt himself before he could reach one thing, to turn to something else. He asked many questions, appeared apprehensive, was babyish in manner. He cried when brought to the examining room, fearing he was going to be hurt and cried two or three times more during the examination. He said he was easily frightened, and that he got angry readily; that he dreamed much. He would like, when he grew up, to go out somewhere and work in the fields. He expressed the belief that he was a good boy, and obeyed well. He was brought to the hospital, he thought, because he was bad, and didn't go to sleep at night.

Physical examinations showed some defects. Posture was poor, abdomen prominent, muscles firm but poorly developed. Fat was excessive over the abdomen. General nutrition was fair. He appeared younger than his age, had a somewhat innocent look, there was slight facial expression. Superior superficial cervical glands were enlarged, the thyroid was palpable and visible. There was mouth breathing without apparent obstruction. The palate was high and narrow. The lower central incisors had irregular edges. The neck was long and thin. the chest was long and narrow. The pulse was rapid, 114, blood pressure 120/50.

The neurological examination showed restlessness which did not appear to be choreiform, the face was smooth and expressionless, the mouth was held open. The eyelids drooped slightly. Otherwise there was nothing abnormal.

An intelligence test had been made at the out-patient department before Charley was received at the hospital. On December 1, 1925, his chronological age was eight years and three months, basal year was V, upper limit VII, mental age six years and five months, I. Q. 74.

Early notes in the hospital recorded Charley as restless, especially at night, when he tosses and turns, and talks to himself. He cried at slight provocation, was over-active and impulsive. He tried to take things from the workshop. He was mischievous, but not really bad. At the gymnasium he did not give attention to the instructor. Several times he was sent from the classroom for disobedience, such as persistently giving answers to questions when asked not to do so.

A little later he was not crying quite so much, but was getting into occasional fights with the smaller boys. He was still restless at night.

At the time of the present writing, March, he has improved much, but is still restless at night, childish and quick to cry. He had shown satisfactory progress in school, seemed to learn something every day. His

whimpering was not so conspicuous, and he was getting over his shyness to some extent. At the worst he had been described as tattling, sly and cunning, disobedient, as having a tendency to steal and lie, as to some extent quarrelsome. In most ways there has been improvement.

The Stanford Revision test was repeated, I. Q. was 79.

CASE SUMMARY.

In this case there is a clear history of epidemic encephalitis, and the persistence of its effects is quite evident. What the child was before his illness is not entirely certain, but there is no evidence of behavior difficulties, and the evidence that he was of low intelligence seems to be good. He had been for a considerable time in school without accomplishing much. Whether there has been some deterioration of intelligence in addition cannot be determined or whether he has actually lost some educational content once acquired. He is regarded as a favorable case for continued treatment. Intelligence is low but he is not mentally deficient, and he has mechanical ability much above his general intelligence level. Despite the mental inferiority there are some redeeming features in this child. While in general the indication is that children having intelligence quotient near border line and also serious behavior difficulties following encephalitis do not do well under training, we have hopes for Charley. The recency of his illness may be in his favor.

JACOB (ABSTRACT).

Jacob came to the hospital on December 4, 1925, and was discharged on March 25 of the same year. He was not a behavior case.

In February, 1923, he fell asleep in the classroom, and went soon into the lethargic stage of encephalitis.

The examinations of this child made after he came to us showed the parkinsonian condition. He probably used the complaint of fatigue to escape from unpleasant effort, but even this tendency was not very marked and the child would try persistently to do what was asked, once his initial resistance to effort was overcome. He improved physically.

DAVID (ABSTRACT).

David was one of the two original members of the group, arriving on December 1, 1925. He was then nine years and three months old.

Although there was a history of severe illness in October, 1918, apparently from influenza, and there was a statement from the boy's mother that prior to this illness he was well-behaved, there were no neurological evidences pointing to previous encephalitis.

By the Stanford Revision test he was found to have an I. Q. of 65.

In the hospital he was unable to adapt himself in association with others, and got along best when he was allowed to play with toys by himself.

He fabricated with great facility, seemed to have but little understanding of his situation, showed poor comprehension, was very impertinent and independent, was distractible and inattentive, and very childish in demanding his own way.

He was dismissed with the conclusion that mental deficiency was probably native, and that he could be trained only by methods suitable for defective children.

William (Abstract).

This child was studied less thoroughly than some of the others. He came to us directly following an attack of epidemic encephalitis, on account of the appearance of troublesome habits and behavior tendencies, especially since a convalescent treatment in bed that had been advised had proved difficult to carry out because of William's disobedience and restlessness.

During the first week in March, 1925, he had the "grippe"; after two weeks of school, he collapsed, was found in an alley, was not unconscious, but had lost the use of his legs. The paralysis lasted about 20 minutes. He was put to bed, was up in three days. About two days after that he began to see double, and his eyes appeared very crossed. During the illness he was very much excited, had fears, imagined he saw people on trees. There was no stupor or drowsiness at any time, and he slept well at night. He acquired a habit of throwing his head back. The physician who attended him wished him to stay in bed a month, but he would run about the house and he displayed bad temper if he couldn't have his own way. Later he began to have a curious interest in water. He would run to the bathroom every little while to get water. He got towels and wet them and dragged them on the floor. He took water from the flowers and poured it on the bed clothes.

Previous to his illness William was a normal child, but somewhat nervous. He had been hit by a truck, about two years before his illness, receiving contusions of the face and head. Still earlier he had had a habit of biting his nails, and would bite wood, but this habit stopped after he was circumcized at the age of three.

He attended school from December to March, was said to be the brightest boy in the class. He has always been active and likes all kinds of sports. He was always a very good boy, affectionate and not high tempered. He got on very well with everyone, was always obedient, and always truthful. He was never a fighter, and seems to have been made nervous or "hysterical" and would run home when he got into trouble. It has been only since his sickness that he was hard to control.

William's behavior in the hospital cannot be said to have been in any exceptional way bad. There were none of the characteristic marks of post-encephalitis. There was some disobedience, or at least indications that there would be if less firmness were used. For a time he was not quite fully cooperative. He annoyed and teased others a little, was sometimes noisy, a little scrappy, talked boastfully occasionally, was inclined to correct

other children for their faults, but all within "physiological limits." He was truthful, usually cheerful, not lazy, mixed well, accepted jibes and rough treatment good-naturedly. He argued a good deal, was at first somewhat restless, and was said to act "like a sensitive child" at times. He talked about being good, liked to be praised for good behavior. No pronounced sleepiness has appeared, and nothing was observed of the peculiar interests that he had acquired at home. He participated well in all the activities of the group.

Physical examinations on admission showed a well developed child who was inclined to restlessness, and had slight, jerky, irregular tremors of the extended fingers. Reflexes were lively; there was a variable left internal squint. Visual fields were restricted. Pulse was rapid, but complete cardio-vascular test showed normal functions—score 12 on the Trentzsch scale.

Psychological tests showed normal intelligence, I. Q., 92.

He went from the hospital to the shore, and did well there, and later returned to school. In November he was reported as appearing to be in perfect health, and as satisfactory in conduct in every way, and since then he has satisfactorily finished a year's schooling.

Clarence (Abstract).

Clarence is a small Jewish boy who was admitted to the hospital on December 18, 1925. He was born October 18, 1918.

When he was four months old, during the epidemic influenza, he was sick, became quiet, and for eight or ten days slept constantly, and had to be awakened to take his food.

The complaint was that he could not be left alone with the children in the family, that he would bite them, strike them and picked up a hatchet to hit one on the head. He would get up early and roam about the house, and rub his wrists together for hours if not interfered with. He was always troubled with enuresis, and until the age of five soiled the bed. A few days before Christmas he came home with a little red wagon he saw on the street in front of a store.

Psychological examinations showed unmistakable mental deficiency. The I. Q. was 45.

He played or wandered aimlessly about the ward. He showed very limited comprehension, and his mental content appeared slight.

The conclusion is that this child is of about imbecile grade, with the probability that the defect was congenital, but with no proof of that. He improved noticeably in a short stay in the hospital, however, cried less, obeyed the nurse much better than at first, seemed to understand better, and improved in his social behavior.

He was discharged on January 11, 1926.

Albert.

Albert is the only member of the group who was accepted as a behavior case in which the disorder had not, so far as was known, followed epidemic

encephalitis. The history of this child is full of interest, but not in the present connection unless for comparative study.

Albert was five and a half years old when admitted to the hospital, was a child of very attractive appearance, somewhat of the angelic type, but boyish. He was quiet, uncomplaining, and showed normal interest. He had become difficult to manage at home, showed eccentric characteristics, had set several fires, and once burned himself badly. He was destructive of toys, hit other children and strangers on the street, was caught smoking, seemed to have no ability to play as other children did.

Mental tests prove that his intelligence is high; by Stanford Revision, when tested in a clinic, I. Q. was 112, and on repetition of the test at the hospital, was 115-118.

The main point in the history so far as physical factors in his condition are concerned is that from three months after birth there was difficulty in finding the right food for him, and a long period of malnutrition and stomach and intestinal trouble. He was delayed in learning to walk, appetite became voracious, and he developed as he grew older the characteristics mentioned. He has grown up without displaying affection for anyone, is a child who is extremely indifferent to punishment and bears hurts with unusual coolness.

He is of especial interest as raising questions about the relations of behavior difficulties to malnutrition and the distortion of appetite, problems about which at the present time we know too little.

Summary of Cases.

We have had in all up to March 15, 1926, 18 children in the department, with a maximum of 12 at one time, all but one accepted as post-encephalitic cases. One of the 17 was a parkinsonian case without behavior difficulties. One was dismissed as mentally deficient and also because there was no clear diagnosis of encephalitis. One was predominantly a case of mental deficiency, probably with encephalitis. One was kept only during a short period of convalescence, having only eccentricities of habit rather than true behavior difficulties. Of 13 cases, there is definite history of lethargy in 10 cases. In 10 cases there was at some time diplopia, or strabismus, or (one case) nystagmus. The prevalence of the oculo-lethargic symptoms does not differentiate, it is true, any type of acute attack that especially is productive of the behavior reactions, since the oculo-lethargic type also precedes the parkinsonian development and is generally prevalent in encephalitis, but it shows that there was distinct pathology of the brain.

We have fairly satisfactory history of the behavior preceding the encephalitis in 12 cases. In seven there is a story of a boy previously good who after his illness became bad. In one case the attack was so early that behavior traits were not established. In four cases there were, before the attack, some of the tendencies shown more distinctly afterwards. In all but one case the behavior change followed closely upon the acute attack; in the exceptional case it came after two years and there was another contributing cause.

In all the 13 cases *restlessness* has been very conspicuous. Eight belong in the runaway class, or have had the habit of staying away many hours from home. In all there is some record of taking things that do not belong to them. Marked eccentricities of conduct have been noticed in nearly all the cases; such as indiscriminate stealing, foolish meddling, extreme over-affectionateness, peculiar fears, babyish conduct, staying out at night, ringing fire alarms, telling extraordinary stories, collecting rubbish, expectorating upon people, making advances to girls on the street, wanton destructiveness.

All of the 13 children have exhibited conduct in the hospital that justified the classification of pathological behavior cases. Four of them have for a considerable time shown no distinctly bad conduct, and one never was very bad in the hospital.

Intelligence so far as can be measured by the Binet tests seems not to have been affected in these children, but in the absence of measurements taken before the illness, such a statement has something of the conjectural about it. Eight of our children have been given the Binet test six months or more after the first test. In one case only is there decided falling off; in this case three tests have given I. Q.'s 101, 91, 84. The others were 66 to 72; 72 to 68; 87 to 81; 100 to 117; 88 to 85; 90 to 92; 91 to 90. There is no evidence certainly of any progressive deterioration of the intelligence. It will be safest, however, not to conclude that the intelligence is not at all affected by encephalitis in cases in which the predominant changes are in the emotions and motor traits, but to measure carefully at fairly frequent intervals. It seems certain at least that if there are accompanying changes in the intelligence in these behavior cases not dependent upon the conduct changes them-

selves, they are slight as compared with the effects upon the emotions and instinctive reactions.

Physical residuals in these cases seem now to be slight, taking the group as a whole. Of the 10 who remain it cannot be said that any one is showing any signs of progressive physical illness. There remains a good deal of restlessness, four have strabismus, there is one case of marked breathing difficulty, one child has a nervous cough.

IV. CONCLUSION AND SUMMARY.

We conclude

1. That the behavior difficulties of these children as a group are directly related to the attack of epidemic encephalitis.

2. That the acute attack was predominantly of the oculolethargic type.

3. That there is some direct relation between severity of the physical injuries and the behavior difficulties.

4. That there has been no evidence of any progressive disease process in these children in the course of a year.

5. That a group of behavior cases of the epidemic encephalitis type has been manageable as a unit, that as a whole it has made fair progress in education, and that behavior has improved much.

6. That these children have responded well to simple methods of disciplining.

7. That if these children are representative, the educational side of treatment is very important; that teaching must be adapted somewhat to special needs, such as arise from the previous irregularity in school attendance and from the behavior difficulties.

8. That some habits and symptoms that are very troublesome in the ordinary conditions of home and school are easily managed in the hospital, or even tend to drop out without interference. Sleeplessness, for example, has never been pronounced in our children, and in only one instance was it necessary to isolate a child for that reason (this child was mentally deficient).

There can be little doubt, although there is no positive proof in the absence of actual demonstration of pathology, that in the behavior syndrome of encephalitis we are dealing with a condition which has an organic basis; and it seems reasonable to suppose that the pathological changes are the factors that give to this syndrome

its distinctive coloring. And yet it seems impossible to formulate any precise correlation between a neural change and a behavior pattern. In some cases the pathology is strongly suggested by the behavior, and the neural residuals help to point the way towards localization, but the behavior reactions are complicated, considerably variable from case to case, and we may suppose that personality elements and environmental factors enter in varying proportions and combine with the organic factors to produce a type to which the behavior pictures conform more or less closely, while at the same time the cases deviate individually from it.

The intensely hyperkinetic form of reaction, in which there is excessive restlessness, irritability, and particularized motor habits, persistent oculo-motor signs, perhaps some suggestions of parkinsonian syndrome, seems the most conclusively organic. But even in these cases the pathological basis must remain at present somewhat obscure. Such lesions as there are are not apt to be progressive, and in general do not even prevent general improvement in behavior. A difficulty in interpretation arises, again, from the fact that in all probability identical functions may be carried on by different structures, and impairments of function may be similar in effect and different in localization; and also because excitation in some region may be identical in behavior effects with removal of inhibitory control in another.

Such being the situation with respect to the pathology all that can be done with confidence is to suggest a good working hypothesis.

There is no reason to suppose that cortical lesions occur that have anything to do with the development of the behavior reactions. No part of the nervous system seems to be immune from attack, but the general occurrence of lesions in the basal ganglia, and the coincidence of the reaction-type as deviations in motor and particularly instinctive reactions with the physiological patterns of known basal ganglia activities, makes it improbable that there is any important pathology elsewhere in the nervous system to be considered in the majority of the behavior cases.

We have to do then with the sensori-motor system, especially, that is centered in the corpus striatum and the thalamus, and through which the main motor reactions, involuntary or automatic

motor controls and activities and regulation of muscle tonus and various vegetative functions are most probably carried on.

The thalamus, we know, is sometimes involved in the pathological changes of encephalitis. But it has been much less discussed than the corpus striatum, and we know little at present whether any of the conspicuous phenomena of the behavior sequelæ may be referred to lesions or functional changes there. If the thalamus is exclusively a sensory organ, "the end station of all the sensory tracts," its pathology may not be so clearly represented in conduct as may that of the corpus striatum with its motor functions. The changes like the normal function may be predominantly sensory or subjective, although we must consider the relations of the thalamus as in line of motor reactions, voluntary, automatic, and vegetative. Whether then, in the sequelæ of encephalitis, the sleep disturbances, the hyper-and hyposensitiveness to pain stimuli, the tendency to over-emotionalism especially as reaction to sensory stimuli, are to be regarded as due to disturbances of the thalamus we cannot know with certainty, but evidence points in this direction. We know of hyperesthesias of thalamic origin, in which "a pin prick may assume the characteristics of an emotional reaction," and in encephalitis cases this sensory phenomenon is often present; and it is also probable that a variety of changes in emotion, mood and emotional expression, and the general heightened response to impressions are in part due to altered function of the thalamus.

The case for the corpus striatum is somewhat clearer. Some of the hyperkinetic phenomena, and the parkinsonian syndrome are traceable with considerable assurance to the corpus striatum or its closest associates. But here we have again complex structures and especially the difficulty of distinguishing between local action and inhibitory effects. It seems well made out that the striate bodies comprise two main systems—the paleostriatum (globus pallidus) and the neostriatum (nucleus caudatus and putamen). The three main functions of the striatum as a whole appear to be the regulation of tonus, maintenance of muscular repose, regulation of associated automatic movements, and to these we must add, control over emotional expression and vaso-motor functions. (Wimmer's summary.) If we recall that the striatum represents "the highest motor control in those low forms of

life where there is no cortical function," we shall understand better the scope of its functions.

We can relate functional changes with localization of morbid processes in the striatum with some little confidence. Nattrass[21] states the present understanding of the motor changes in encephalitis thus: It is probable that lesions of the globus pallidus of the lenticular nucleus are responsible for the increased tone in the skeletal muscles as in the parkinsonian syndrome, and that disorders of the putamen and caudate nucleus are associated with abnormal movements such as chorea and different types of tremor. Vogt says that isolated involvement of the neostriatum produces the striatal syndrome, more especially different forms of hyperkinesia, choreatic movements and athetoid movements, tremor, involuntary movements, laughing and weeping, due to abolition of the inhibition of the substriatal ganglia. Hunt says that invasion of the corpus striatum produces three types of effect according to the location: Paralysis agitans-paleostriatal; choreiform-neostriatal; mixed. Souques thinks of the centers involved in parkinsonian syndromes as both motor and vasomotor. Here, at least, the physiology becomes problematic, but for our purposes the solution of these questions such as the relation between motor and vegetative phenomena at the lower levels is of no direct importance. Vercellini makes the statement that although every vegetative function can be affected by abnormal function of the thalamus there is not one of these disturbances that cannot also be obtained by irritation or alteration of other basal ganglia. Irritation of the head of the nucleus caudatus in dogs when the cortex is removed can determine the phenomena of emotional mimicry, partial destruction causes spastic laughing and crying.

To try at the present time to draw very fine lines of distinction in the function of the basal mechanisms is obviously futile. What is important for us to consider is the fact that in encephalitis there is an organic basis, and that whatever the lesion may be there is a deep disturbance of functions which have a psychic correlate or issue in conscious behavior. Reactions at the lower levels are intensified: we have increased instinctive and emotional responses,

[21] The Sequelæ of Encephalitis Lethargica. The Clinical Journal, Jan. 21, 1925. Vol. 54, No. 3, pp. 25-29.

hyperkinesis, automatisms, disturbances of tonicity, and the like. The gravity of the lesions must vary much in different cases, probably also the location. The main result, providing a general background for the whole class of cases is an unbalance of functions of such a nature that there is over-activity at these levels. Responses to environmental conditions are to an abnormal extent uninhibited, but whether this effect is to be attributed to the disturbances of the mechanisms directly involved in producing the activities or to interference with inhibiting mechanisms cannot usually be determined.

The pathology forms the *background* for the picture. It is not safe to conclude that it provides a necessary or a sufficient basis for the whole sum of the behavior reactions in encephalitis. It is not at all improbable that real pathological effects may be very slight at the most, while the behavior reactions are very pronounced and persistent. The brain functions more or less as a whole. Its integrity as a whole is the basis of a balance of functions which in certain periods of development is apparently a delicate one. It is an interesting fact that the character changes following encephalitis occur in the great number of cases in the middle period of childhood. It is hard to believe that the localization of lesions shifts definitely with age. What is much more probable is that this is a period in which the relations between lower and upper organs in the brain are not well established. On the mental side it is a time in which habits conforming to the demands of society are fairly well fixed, but are dependent upon the continued presence of authority. A brain disturbance which affects the lower levels may throw the whole balance out of adjustment, producing highly deviated behavior for which quite certainly one should not expect to find localized lesional correlates. The child is involved in a problem of reeducation of controls, it may be with some permanent handicap on the physical side; but there is seldom anything to suggest that there is lacking any essential brain mechanism. There is regression to a more infantile form of activity, not reproducing any stage of development as a whole, but showing the features of an earlier period in the uninhibited response to stimuli and the disregard of the external controls. The demands are immensely increased in some cases,

and the capacity for satisfying them, or being satisfied with deprivations is lessened. There is then a fertile ground for the development of reactions having anger, fear, erotic feelings behind them, reactions which represent impracticable and socially undesirable forms of activity. These developments refer to the lesions, but are no direct correlate of them. In many cases there are both subjective and objective contributors to a sense of inferiority or general insecurity. The child *feels* weak, and is ready to over-react to any existing inferiority which previously he may even have been unaware of. He becomes over-sensitive to his small stature, his intellectual inferiority, his inability to compete in games. He has lost time from school, lost social contacts, and particularly he is suspected by his mates of being mentally affected. This last is a severe strain upon the already disordered emotions.

Treatment and Outlook.

The outlook and the main lines of treatment of these cases may be inferred from the foregoing. We are certainly not justified in dismissing these cases as organically affected children who should be institutionalized indiscriminately as "psychotic" or "defective." There is a common background of physical effect, but the essential therapy and education must be based upon the recognition of the personality as individual. The appearance of different factors in different cases is as important as the common pathology. *Low intelligence is a serious handicap in the treatment, since the educative side is what is most depended upon in reconstruction of the behavior.*

The first requirement, after the selection of cases with reference to improvability, and some consideration of the fitness of the child in question for the group in which he is to be introduced is naturally to establish the most favorable hygienic conditions, and to attend very closely to the removal of all physical defects that may be remedied. The child then becomes a personality problem. He may act a good deal like his nearest neighbor and be really very different. Both may be extremely restless, in one case the hyperkinesia being due largely to still persisting effects of the illness, in the other being a result of feelings of inferiority. These feelings of inadequacy, again, may have a very different background in different cases. They may have originated in a physical

inferiority that has been exaggerated by the illness in the alimentary system, the vascular, endocrine or sexual. They may be more superficial, connected with social stimuli, orphanage, sexual trauma. So we need a careful study of the personality of the child quite as though there were no organic factor to contend with at all. Presumably there is no personality immune to attack by the virus of encephalitis, but experience seems to show us that as contrasted with their *conduct,* these children are fundamentally *good* children.

So far then the best situation for these children appears to be one in which they are managed in small groups, where the basis for the whole management and treatment is the establishment, first of all, of conditions that provide for most progress along educational lines, and in which the normal daily life of the ordinary child is so far as possible duplicated. These children can lead essentially normal lives, with a surprising reduction in undesirable behavior (even in what appeared to be deep seated habits developed during their life in the ordinary situations in which they had been placed), such as the sleep difficulties and the like.[23] The second requirement is an understanding of these children on the personality side, in order to relieve strain so far as possible upon the weak spots of their nature, to re-educate, to take advantage of favorable tendencies. It is highly desirable that the child should have much normal daily satisfaction, that he should feel also that he is making progress from day to day along lines of childhood's chosen paths. He should feel too the necessity of responding up to the degree expected of normal children, to the demands of those in authority, should be made to accept a sense of responsibility, and not be allowed to believe merely that he has had "sleeping sickness," and that has made him "bad." Most of the children of this class are fairly certain to have been treated both too harshly and too leniently—to have been regarded by turns as sick and as criminal. A more even attitude, with enough tolerance to prevent retributive justice being administered and enough resourcefulness in rewards and punishments and the like to get obedience and practical effort, seems to be what is required.

[23] See a recent article by Grichton Miller: British Medical Journal, Feb., 1924.

Whether, in addition to such a treatment there is place for more special treatments either physical or mental remains to be seen. With all the special medication that has been proposed and tried in the treatment of encephalitis we have little to do here. These children improve much in general health under good wholesome living condition. Whether there remain chronic encephalitic processes in some cases is hard to determine, but in our own cases there was no good evidence of this. These children seem to be capable of being made essentially well children so far as their observable physical condition is concerned. They gain in weight, strength and endurance, and anemic conditions are readily relieved.

An important question remains, namely, whether psychoanalysis offers any promise of much help in these cases. A recent discussion clears up somewhat the theoretical ground, and there was some report of actual success, with the usual doubt whether the result was inherent in the psychoanalysis or in the general aspects of contact and the lapse of time, and the tendency as was pointed out for these cases to respond well for a time to a variety of treatments. It seemed well enough brought out that neither the presence of organic factors nor the fact that many of these cases are at an age and stage of psychosexual development that prevents strong transference contraindicates the application of analytic procedure. The organic hurt produces conditions that parallel others in which psychoanalysis *is* applicable. There is narcissistic fixation, conflict of instincts and repression, tendency towards display, incest and sado-masochism, the homo-sexual tendencies come out strongly, much of the behavior seems compensatory for feelings of inferiority and the like. So, independently of the possibility of reaching by analysis the physical reactions such as hyperpnœa, tremor, greasy skin, and parkinsonian symptoms in general as some appear to think possible, there appears to be a field for the application in some cases of the analytic methods, in part to symptoms that are more directly an outcome of the injury itself, and in part to cases in which the original personality deviations have been accentuated by the disease. The suggestion that by the "method of phantasy" we may deal best with the behavior symptomatology at least should be followed out.

Whether we should regard these children, except for purposes of study, as a group requiring segregation from other types of

pathological behavior cases, remains an open question. There seems to be no very strong practical reason for doing so. The care and treatment of behavior cases are necessarily to a large extent individualized, but there are common fundamental situations and routines that apply to all. Hospital study and treatment of a fairly extensive sort are needed and must be distinguished both from the custodial and educational care of the children. We need hospitals in which certain difficult but improvable cases may be given the advantage of all the methods now at hand for investigation and treatment.

If in psychiatric hospitals enough money can be spent on these cases to study them as the staff recommends, we believe that much can be accomplished in ways that appeal to the humanitarian as well as to the scientist, and that the present feeling of hopelessness in regard to these children will disappear.

It is not hard to see that in reporting our experience with these boys we have left out more than we have put in. We have omitted our records of psychological tests. In testing intelligence, beside the Stanford Revision of the Binet tests, many performance tests were used, tests of educational achievement and mechanical ability, suggestibility, sorting tests, beside a pendulum and reflex wink control test. Reaction time was measured. Individual and group behavior have been charted each week. Correlations between different symptoms have been figured. A comparative study of school children has been made.

Special examinations also are not reported upon above. We have used X-rays, special examinations of eyes, ears, nose and throat, anthropological measurements, psychogalvanometer and cardio-vascular function tests.

Some of these are to be included in a psychological report. The extent of these unreported data is mentioned to show that we do not underestimate the complexity of the problem.

A STUDY OF DELIRIUM.

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The protean manifestations of delirium have made it a difficult syndrome to describe or formulate and have argued for an individual factor in the disease rather than a very specific exciting cause. However, delirium occurs usually under the conditions of fever, infection, or toxemia.

It has long been recognized that certain persons become delirious easily and with only a slight infection; while others, under the distress of severe illness and high fever, remain clear. This raises the question as to the type of person that is more likely to become delirious. Are persons who suffer from other forms of mental or nervous disease more likely to have deliriums? Are persons who are socially or economically less adaptable more likely to have deliriums? These questions constitute the first problem in this study.

It became known during and after the late war that some aviators in flying to high altitudes became temporarily incompetent[1] and might even show very decided abnormality of behavior. It was not known what caused these temporary upsets, but it was suspected that lowered oxygen tension had much to do with it. Accordingly, methods were devised so that a man could be subjected to the oxygen tension corresponding to that of any given altitude. By this method the behavior of aviators could be studied on the ground and under an oxygen supply comparable to that of any given altitude. It soon became known that there was an altitude for each aviator above which it was not safe for him to go. This was termed his "flying ceiling." The flying ceiling was 10,000 feet or more for most men. It appeared to be somewhat lower for those individuals in whom there was evidence of arteriosclerosis.

A variety of changes might occur[2] in a man subjected to an oxygen tension that exists above his ceiling. If a man were in a chamber being depleted of oxygen and were expected to respond to certain signals, touch-buttons, etc., a time would come when his

reactions would be definitely delayed. A bit later he might make some effort to respond to signals by lifting the arms, or by making partial executions. Later he might be able to do nothing but stare at the signals. Upon returning to normal oxygen tension some men declared that they had performed all the tasks, apparently not being aware of the time when impulses to do tasks were merely initiated and never carried out. In some cases an undue euphoria developed which was productive of errors of performance. Euphoria might suddenly change to anger and resentment. Some men had an uncontrollable desire to sing or whistle. It is believed that a few experienced a transitory psychosis, possibly with hallucinations of hearing or seeing. In one known case it appears that an aviator who went above his ceiling in actual flight became motivated by the belief that he was being attacked by an enemy plane. He turned in attack on another plane in the squadron with him, and fell, causing his own death and the death of several other men. The same aviator had previously been examined by a competent psychiatrist and pronounced normal. There is little doubt but that he was normal at the time of his psychiatric review. It is said, by those who have studied such behavior anomalies, that they disappear as quickly as they appear when the aviator returns to within his ceiling. The importance of such knowledge for aviation is at once apparent. It would seem that in the mere reduction of oxygen pressure it might be possible to measure the reserve of adaptive power of a person and at the same time learn something of the character of his latent behavior anomalies. At what ceiling or in what oxygen tension does a man become disoriented for time, place, and person, and thus simulate delirium—possibly a deprivation delirium? Such observations would raise the question of the incidence of delirium among people who live at high altitudes. This is the second problem about which information was sought in this study.

To bring more light to these questions a group of 375 persons (or their closest relatives) were interviewed for history of delirium, with the following questionnaire as a guide:

(1) Name.
(2) Sex.
(3) Age.
(4) Information obtained from—(preferably father and mother).

(5) Ever delirious, "flighty" or "out of head" on account of a severe sickness or fever?
(6) If so, how many times?
(7) Ages at which deliriums occurred?
(8) Disease associated with each delirium?
(9) Severity of each delirium:
Definitions: Mild—transitory; only a few hours.
Moderate—several days; abnormal behavior.
Severe—a week or longer; markedly "out of head."
(10) Brief description of delirium if it is remembered.
(11) Ever have a severe nervous breakdown except delirium?
(12) Ever have a mental breakdown except delirium?
(13) Any nervous or mental disease in family?

The results of this inquiry are partly summarized in Tables I and II, and Curves I and II, which follow.

TABLE I

	Total number.	Males.	Females.	Median age.	Total number giving a history of delirium. M.	F.	Tot.	Per cent having had delirium.	Number of deliriums per person. 1	2	3	4	Total incidence of delirium.	Median age of delirium.	Diseases associated with delirium.
Normal people, Leadville, Colo. Alt., 10,200 ft.	90	62	28	35.5	7	1	8	8.8	7	1	..	..	9	20	Typhoid, 2; after operation, 2; diphtheria, tonsillitis, scarlet fever, bilious attack, 1 each.
Normal people, born and reared at sea level, East Coast.	85	43	42	34.0	12	6	18	21.2	13	3	1	1	26	14	Typhoid, 6; tonsillitis, 6; influenza, 4; brain fever, 2; malaria, grippe, severe abdominal pain, scarlet fever, measles, childbirth, 1 each.
Patients, Colo. General Hospital, Denver. Alt., 5200 ft.	50	28	22	40.3	7	6	13	26.0	10	3	..	..	16	23	Typhoid, 6; pneumonia, 6; influenza, 3; measles, 1.
Patients, Colo. General Hospital Dispensary.	50	20	30	31.5	6	9	15	30.0	11	0	4	..	23	21	Pneumonia, 10; typhoid, 3; smallpox, 2; influenza, 2; asthma, mercury poison, encephalitis, scarlet fever, tonsillitis, illness with first menstruation, 1 each.
Patients, Colo. Psychopathic Hospital, Denver.	50	16	34	35.0	8	9	17	34.0	12	1	1	3	29	16	Pneumonia, 5; typhoid, 5; measles, 4; influenza, 3; fever, 2; stomach trouble, 2; blood poison, 2; operation, rheumatic fever, malaria, "cold," 1 each.
Normal people from Mississippi Valley.	50	22	28	31.0	10	10	20	40.0	14	5	1	..	2[illegible]	19	Typhoid, 5; scarlet fever, 4; influenza, 4; measles, 3; pneumonia, 3; tonsillitis, 2; smallpox, 2; rheumatic fever, severe cold, T. B. peritonitis, abscess, 1 each.
Total	375	191	184	....	50	41	91	24.3*	67	13	7	4	130	..	Typhoid, 27; pneumonia, 24; influenza, 16.

*Average.

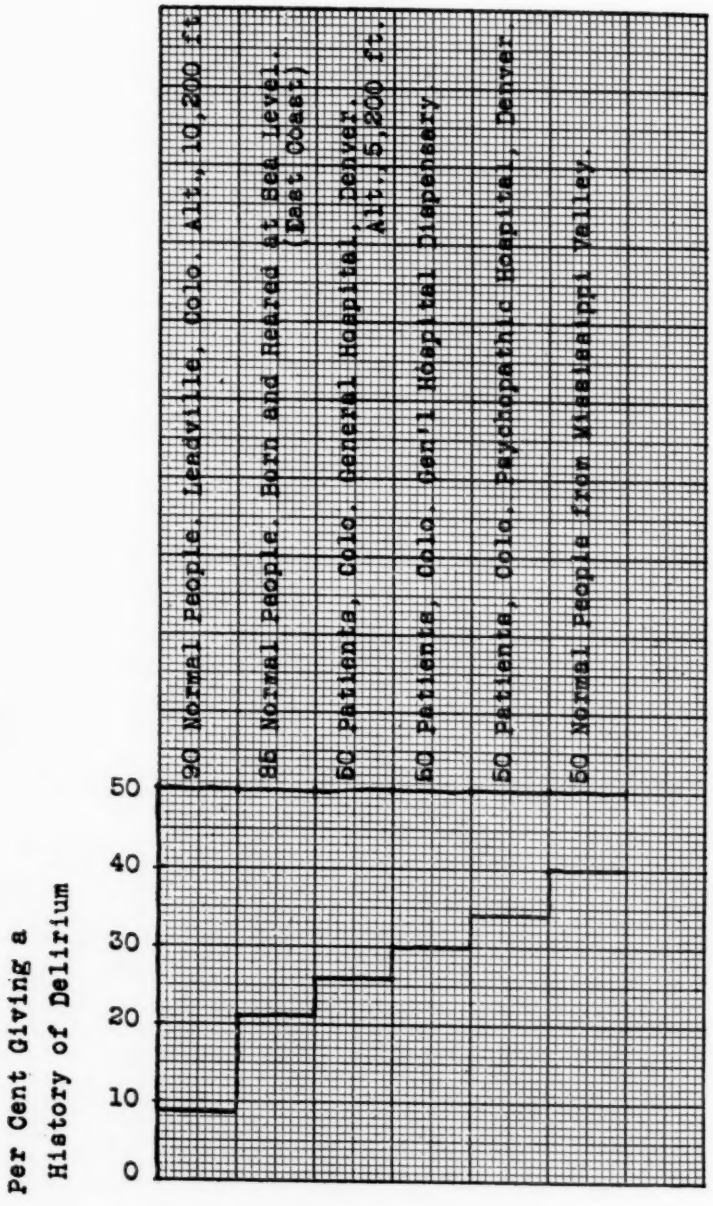
TABLE II

enza, 16.

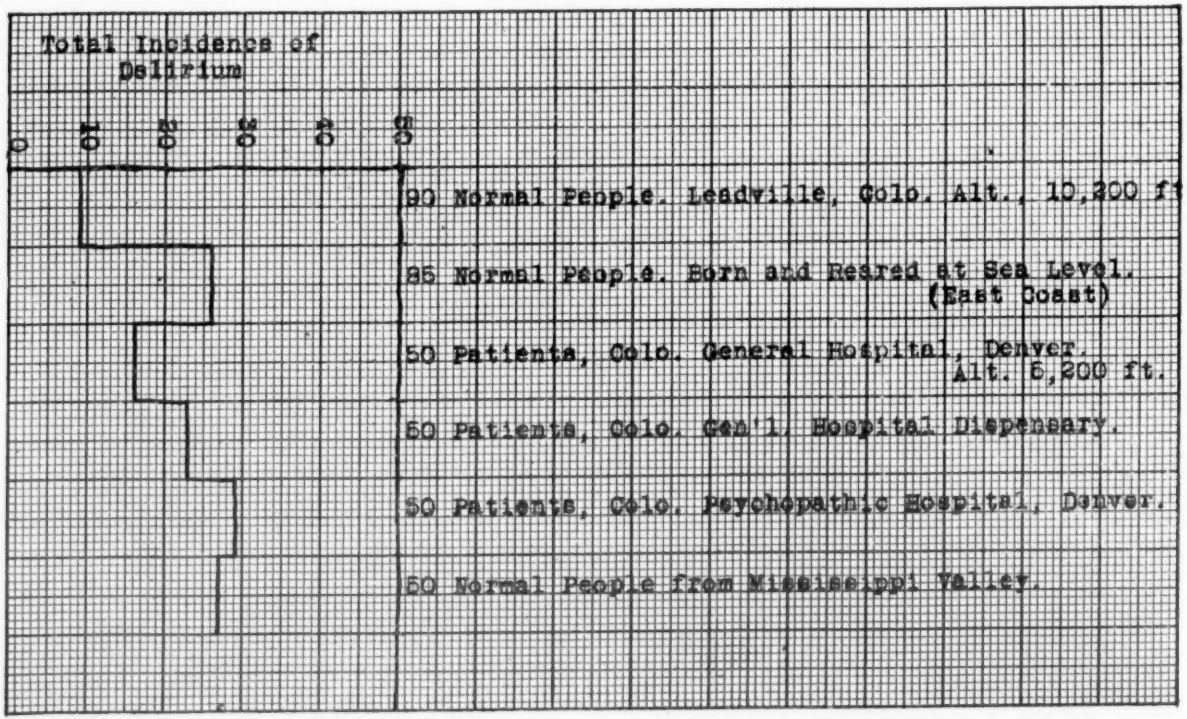
*Average.

TABLE II

	Severity of delirium.			Diseases associated with severe delirium.	Remarks.
	Mild.	Moderate.	Severe.		
Normal people, Leadville, Colo. Alt., 10,200 ft.	8	0	1	Diphtheria.	3 had had a nervous breakdown. 3 others gave a history of nervous and mental disease in the family. None gave a history of delirium.
Normal people, born and reared at sea level, East Coast.	17	6	3	Brain fever, scarlet fever, typhoid.	2 had had nervous breakdowns. 8 gave a history of mental disease in the family and 5 of the above gave a history of delirium.
Patients, Colo. Gen'l Hospital, Denver. Alt., 5200 ft.	5	6	5	Typhoid, 4; influenza, 1.	5 gave history of nervous breakdowns. 2 gave history of nervous and mental disease in family. 2 of the above gave a history of delirium.
Patients, Colo. General Hospital Dispensary.	14	6	3	Influenza, typhoid, encephalitis.	12 had been nervous or had nervous breakdowns. 5 gave a history of nervous disease in family. 5 of the above gave a history of delirium.
Patients, Colo. Psychopathic Hospital, Denver.	14	10	5	Pneumonia, 2; measles, 1; rheumatic fever, 1; influenza, 1.	25 gave a history of mental or nervous disease in the family. 7 of these gave a history of delirium.
Normal people from Mississippi Valley.	16	5	6	Pneumonia, 2; typhoid, 2; scarlet fever, 1; measles, 1.	2 gave a history of nervous breakdowns. 3 gave a history of nervous or mental disease in the family. 1 of these gave a history of delirium.
Total	74	33	23	Typhoid .....8 Pneumonia .....4 Influenza .....3 Scarlet fever .....2 Measles .....2 Diphtheria .....1 Encephalitis .....1 Brain fever .....1 Rheumatic fever ...1	


Per Cent Giving a History of Delirium
0
10
20
30
40
50
90 Normal People, Leadville, Colo. Alt., 10,200 ft.
86 Normal People, Born and Reared at Sea Level. (East Coast)
60 Patients, Colo. General Hospital, Denver. Alt., 5,200 ft.
60 Patients, Colo. Gen'l Hospital Dispensary
50 Patients, Colo. Psychopathic Hospital, Denver
60 Normal People from Mississippi Valley.

CURVE I.—Per Cent of Individual Groups Giving a History of Delirium.


Total Incidence of Delirium
0
10
20
30
40
50
90 Normal People. Leadville, Colo. Alt., 10,200 ft
85 Normal People. Born and Reared at Sea Level. (East Coast)
50 Patients, Colo. General Hospital, Denver. Alt. 5,200 ft.
50 Patients, Colo. Gen'l. Hospital Dispensary.
50 Patients, Colo. Psychopathic Hospital, Denver.
50 Normal People from Mississippi Valley.

CURVE II.—Total Incidence of Delirium in Each Individual Group.

From Table I it may be seen that the people studied were of fairly comparable age. The highest percentage of individuals having had delirium was that found in normal persons from the Mississippi Valley; while an equal number of patients from the Colorado Psychopathic Hospital presented the greatest incidence of delirium. There was a higher percentage of cases of delirium from either of these groups than was reported by normal individuals at sea level. Thus a smaller per cent of all of the normals had delirium, with fewer total cases, than the patients in the Colorado Psychopathic Hospital presented. The difference, however, was not marked. From a comparison between the normal people and the free dispensary patients one could drawn no conclusions regarding the relationship between the social and economic status and the relative frequency of delirium. The agencies inducing delirium were similar for all groups.

Table III, which follows, gives the diagnostic and delirium data with regard to patients in the Colorado Psychopathic Hospital.

TABLE III.

COLORADO PSYCHOPATHIC HOSPITAL PATIENTS.

Diagnosis.	Number.	Number having delirium.	Instances of delirium.
Depression	12	5	6
Dementia precox	10	3	3
Mania	8	2	2
Psychoneurosis	7	0	0
Paranoia	3	1	4
Psychosis with arteriosclerosis	3	3	6
Paresis	2	1	1
Epilepsy—grand mal	2	2	7
Constitutional psychopathic inferior	1	0	0
Drug addict	1	0	0
Brain tumor (cyst?)	1	0	0
Total	50	17	29

Because of the small number of cases it would be inadvisable to draw conclusions as to the type of psychosis, neurosis, or psychopathic defect that would be most prone to have delirium in fever.* In this connection, it might be stated that Aschaffenburg[1]

*Of 24 paresis and tabes cases treated with malaria, 13 had transitory delirium during the chill or fever; nine had no delirium; and in two cases it was impossible to tell.

thinks that fever psychoses are always catatonic in character. Hoch [4] described stupor cases that had delirioid features and were recoverable.

The following cases are of interest from the standpoint of delirium:

B. S., A married woman, 51 years of age, was admitted to the clinical service of the Colorado Psychopathic Hospital on May 26, 1925, in a very maniacal condition. There was mental disease in her family. She had always been rather domineering, restless, and quite a talker. *Never in her past illnesses had she been delirious.* She had never had a nervous or mental breakdown until a few months previous to admission, at which time she became fatigued with much entertaining and many social obligations and began to talk more than usual. She became very active, unduly religious, and grandiose with regard to some financial and religious plans. On admission she was extremely active and talkative. She was very distractible, showed flight of ideas, rhyming and punning. She was decorative, careless with excreta, vile in her language, and very erotic. She remained in this highly elated state for about six months; she then gradually became quieter and less active. Eight months after admission she had become nearly normal in all of her behavior; at this time she developed a severe streptococcus sore throat, with fever 104.8° F. (rectal). She was quite ill from this for 10 days *during which time she was not delirious.* Upon recovery from her sore throat she again became very maniacal and is in that state at the present time.

This patient, with mental disease in the family, had a violent mania from which she made a temporary recovery, during which time she had a severe infection with high fever. She had never been delirious in her life and was not delirious with a serious infection during a remission in her manic psychosis.

The following case illustrates the opposite tendency. A normal young man, from a stable family with no former history of nervous or mental disease, developed a delirium each time he had a fever. The deliriums were of short duration. During them he misidentified people; things seemed strange to him; he was restless; and on one occasion, he felt that he was being cut to pieces.

S. B. C., a college student, 22 years of age, is entirely normal, with no history of nervous manifestations of any sort. The family history is negative so far as mental or nervous disorders are concerned. This young man, who is possibly remarkable for his mental balance in everyday life and in normal health, shows a marked tendency to delirium in cases of acute infection accompanied by a considerable rise in temperature. This has been apparent from early childhood. At the age of 20, when suffering from an

attack of measles (temperature 105° F.), the patient thought he was in seven parts, and during the height of the fever struggled to collect his seven parts that he might make himself one again. Delirium ceased with the reduction of fever and no after-effects were apparent.

The second problem, viz., the effect of altitude on producing delirium in fever, has been suggested by the observation that aviators show mental changes at very high altitudes. Information was obtained from persons having lived an average of 31 years in Leadville, Colorado (altitude, 10,200 feet). In order to see what infections these people had had, a census of their diseases while residing at Leadville was made. Among other diseases of that group were 30 cases of measles; 23 of influenza; 17 of scarlet fever; 15 of chickenpox; 12 of typhoid; 11 of whooping-cough; 10 of mumps; 7 of pneumonia; 4 of smallpox; 3 of diphtheria; 3 of tonsillitis. From such a group of diseases it is striking to have only nine instances of delirium and all of these mild and transitory, with the exception of one which occurred with diphtheria.

Interviews with physicians practicing at high altitudes yielded varied reports regarding the frequency of delirium. The concensus of opinion seemed to be that there were probably no more deliriums with infectious diseases at the highest altitudes in which people live in the Rocky Mountains than at lower altitudes, but that when an infectious disease becomes complicated by delirium it is very likely to be fatal. No definite proof on this point could be obtained, but the fact remains that among Leadville's living citizens who were interviewed there is a lower delirium rate than in any other group studied. It has been observed that a comparatively quick ascent to a high altitude is marked by acute circulatory disturbances and nervous phenomena.[5, 6, 7] Possibly living at a high altitude may develop an immunity to those delirioid reactions which accompany rapid ascent. Much work remains to be done on this interesting subject.

Of 91 patients having 130 instances of delirium, 64 remembered some descriptive facts about them which are briefly summarized. The delirium of all groups possessed common features. By grouping the descriptions the following large headings are brought out:

(1) Push of talk, usually described as irrational, including singing, yelling, whistling, muttering.

(2) Restless urge of activity: walking, picking, blind groping.

(3) Hallucinations, visual rather than auditory, characterized by rapid movement of animals, people, and objects; and the strange appearance of people and things.
(4) Peculiar feeling of the unreality of things; fright, feeling of falling, of being detached, of being unable to see, hear, or talk; irritability; disagreeable heat and thirst.
(5) Delusions: transitory, unsystematized, annoying.
(6) Sleepiness and transitory unconsciousness; temporary failure of memory.

The character of these deliriums coincides fairly well with the descriptions in the literature.[8, 9, 10, 11, 12] Typhoid fever, pneumonia, and influenza were the exciting causes for most of the deliriums. No individual differences in the deliriums in these three diseases were observed in the cases studied. The relationship between delirium and influenza has been noted.[13] Though most of the deliriums occurred under 20 years of age, a goodly number came in later years. The severest deliriums tended to occur at earlier ages. As regards sex, the deliriums were about equally divided between males and females. Over half of all deliriums were mild. The disease most frequently associated with the severest deliriums was typhoid fever. There was a marked tendency for deliriums to be alike in the same person even with different diseases, though in some cases they were quite dissimilar. This was especially true if deliriums occurred in the same person at widely varying ages.

Since delirium can be induced by drugs (hyoscine, bromides, alcohol, ether, etc.)[14] as well as by infections and toxemias of disease, it seems apparent, as has been observed before, that the inciting agent only serves to release certain behavior tendencies that are part and parcel of the personality. This serves to explain the protean manifestations.

SUMMARY.

(1) Delirium occurred somewhat more frequently among patients in a psychopathic hospital than among normal people of the same age; the difference, however, is slight and suggests that delirium is a very distinct entity, probably different from the usual diseases seen in a psychopathic hospital. In this study no proof was obtained regarding the relationship between the economic and social dependency and the incidence of delirium.

(2) Despite the psychopathological phenomena observed in aviators who fly above their ceiling, normal people living an average of 31 years at Leadville, Colorado (altitude 10,200 feet), gave histories of less delirium than normal individuals having always lived at sea level. It has been thought that delirium as a complication in infectious disease at high altitudes is more fatal than at low altitudes, but this is not proved.

(3) The outstanding characteristics of the deliriums studied are: Push of irrational talk, vocal and general motor restlessness, visual hallucinations (rather than auditory) of moving objects, animals or people, peculiar feelings, unreality feelings, delusions that are transitory and annoying, blind groping, sleepiness, defective perception, and distorted awareness of environment.

(4) The most common diseases associated with the group of deliriums studied are typhoid fever, pneumonia, and influenza. There is no evidence from this study that there are deliriums peculiar to these diseases.

(5) The character of delirium, whatever its exciting cause, is largely determined by the personality of the individual, and as such, shows a great variety of reactions.

For assistance in this study the writer is indebted to the Social Service Department of the Colorado Psychopathic Hospital, especially to Miss Lena Pecover, and to Surgeon Lawrence Kolb, of the United States Public Health Service.

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A NOTE ON TYPE OF ONSET IN RELATION TO CLINICAL TYPE IN GENERAL PARALYSIS.

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In a recent study of the earliest departure from their normal state of health observed in a series of 74 male cases of general paralysis, of which some of the results have been reported elsewhere,[1] it was found that *irritability* was among the earliest symptoms recognized by the intimates of the patient in 42 of the series, while a *seclusive type of reaction* was a similarly early manifestation in 28. The emotional disorder took the form of irritability alone in 29 patients, and of seclusiveness alone in 15; in 13 patients both these symptoms characterized the prodromal period of their disease, irritability appearing first in eight of the 13, a seclusive reaction first in the other five. Thus a definite morbid alteration in the emotional sphere characterized the onset or the earliest stages of the disease in 57 out of 74 cases of general paralysis, or in 77 per cent; an alteration which first made its appearance at an interval ranging from six months to more than four years prior to the outbreak of frank mental symptoms. This interval tended to be somewhat longer, on the whole, in the case of irritability than in the case of the seclusive type of reaction.

A further survey has been made of this material to determine whether any connection exists between the type of onset, in the sense above described, and the so-called clinical type of general paralysis which these patients subsequently manifested. Since the symptom designated as irritability consists in the main of an excessive emotional reaction to situations and to stimuli which would not ordinarily evoke an outward response, it might seem not unlikely that patients exhibiting this type of onset would tend to develop general paralysis of the expansive or the "manic" (*"agitierte"*) type. Since the symptom designated as a seclusive type of reaction consists in a loss of emotional response, an apathy or indifference, an apparent withdrawal of interest from the things which formerly beguiled the patient, it might also seem consistent

that patients with an onset of this type would tend on the whole to develop general paralysis of the simple dementing type. If, however, the type of onset has no bearing upon the clinical type of general paralysis which eventually develops, then the patients who represent the two types of onset here in question will respectively show the same distribution among the three clinical types referred to as does the group as a whole.

Of the 57 patients here considered, 28 were of the simple dementing type (or 49 per cent), 15 were of the expansive type (or 26 per cent), 11 were of the "manic" type (or 19 per cent), and three were of the paranoid type (or 6 per cent); and this corresponds fairly accurately with the distribution which we have found to characterize another and larger group of patients, 106 in number—namely, 53 per cent, 19 per cent, 17 per cent, and 6 per cent, respectively.[2]

If there exists no relationship between type of onset and clinical type of fully developed disease, the "irritable" cases and the "seclusive" cases should alike show a distribution somewhat similar to this. The actual findings were as shown in Table 1.

TABLE 1.

	Onset characterized by irritability		Onset characterized by seclusiveness		
	(*a*) Alone (29 cases)	(*b*) Including cases in which irritability was followed by seclusiveness (37 cases)	(*a*) Alone (15 cases)	(*b*) Including cases in which seclusiveness was followed by irritability (20 cases)	Total group (57 cases)
Simple dementing..	9— 31%	15— 40%	10— 67%	13— 65%	28— 49%
Expansive	8— 27%	9— 24%	5— 33%	6— 30%	15— 26%
"Manic"	10— 35%	11— 30%	0— 0%	0— 0%	11— 19%
Paranoid.....	2— 7%	2— 6%	0— 0%	1— 5%	3— 6%
Total	29—100%	37—100%	15—100%	20—100%	57—100%

From this tabulation it is seen that the "irritable" patients and the "seclusive" patients each contributed the same proportion of *expansive* cases as did the group as a whole; so that it would appear that the type of onset, in the sense here taken, is without influence, for or against, the subsequent development of general paralysis of the expansive type. On the other hand, there is a somewhat greater tendency—not at all marked, to be sure—on the

part of the " seclusive " patients than on the part of the " irritable " patients to develop paresis of the simple dementing type (65 per cent and 40 per cent, respectively, *versus* 49 per cent of the group as a whole). But the incidence of " manic " cases among those in whom irritability was one of the earliest symptoms is practically double the proportion of " manic " cases in the group as a whole, while the incidence of " manic " patients among those in whom seclusiveness was an early symptom is zero.

If, instead of classifying this material according to the character of the initial emotional disturbance, irritability or seclusiveness, manifested, we ask what proportion of each of the clinical types of general paralysis exhibited one or the other of the early symptoms under discussion, we obtain the results shown in Table 2.

TABLE 2.

Onset characterized by	Simple dementing.	Expansive.	" Manic."	Paranoid.	Total group.
Irritability.....	9— 32%	8— 53%	10— 91%	2— 67%	29— 51%
Seclusiveness...	10— 36%	5— 33%	0— 0%	0— 0%	15— 26%
Both symptoms..	9— 32%	2— 14%	1— 9%	1— 33%	13— 23%
Total.....	28— 100%	15—100%	11—100%	3—100%	57—100%
Irritability with or without subsequent seclusiveness.....	64%	67%	100%	100%	74%
Seclusiveness with or without subsequent irritability	68%	47%	9%	33%	49%

From Table 2 it appears that the simple dementing cases are as likely to have had one type of onset as the other; the expansive cases are somewhat more prone to have been characterized by irritability, rather than by seclusiveness, as one of the earliest symptoms; but the " manic " cases are recruited exclusively from among the patients who early manifested an irritable type of emotional disturbance.

Moreover, if we compare the various incidences of the two varieties of onset among the four clinical types of paresis with the incidence of the two forms of onset in the group as a whole, we see that once again the expansive group presents much the same distribution regarding type of onset as does the group of cases as a whole; but the simple dementing patients are somewhat less inclined to have exhibited irritability as an initial symptom, and

somewhat more likely to have manifested early seclusiveness, than is the case with the entire (unselected) group; while on the other hand the entire number of "manic" patients was characterized by the "irritable" type of onset, none by the "seclusive."

In sum, then, there is little correlation between the type of onset in the sense here discussed and the clinical type of general paralysis which subsequently develops, save with respect to the "manic" cases, whose onset appears to be characterized by irritability rather than by seclusiveness when either of these two forms of initial emotional disturbance is in question. The expansive cases behave in this regard approximately as an unselected group of paretics would do, while the simple dementing patients show in this series a slight but not at all striking tendency toward a "seclusive" in preference to an "irritable" type of onset.

A glance at certain other symptoms which have characterized the earliest onset of general paralysis in these 74 cases reveals the fact that among the 15 patients who exhibited an increased *tendency to sleep,* and among the 22 patients in whom *loss of weight* appeared, as one of their earliest symptoms, the proportion of patients who developed the several clinical types of paresis was essentially the same as the proportion which obtained for the entire series; so that it would seem that neither of these symptoms has any significance from the standpoint of the clinical type of the disease which will later develop. A similar conclusion is less safe in the case of *forgetfulness,* however, a symptom which was among the first to appear in 15 patients in the series; for 10 of these developed the simple dementing type of general paralysis. Whether a large number of cases would corroborate this rather high percentage of dementing patients must remain in doubt, especially since the symptom itself, it has seemed to us, is one which lends itself to accurate observation on the part of the informant somewhat less fully than do some of the others. On the other hand, of the 11 patients who exhibited *speech defect* as one of their earliest symptoms, all but one developed the simple dementing type of paresis; and even the one exception is possibly more apparent than real, for, apart from a number of ideas of reference, he would have been classified without question as a case of simple dementing type, while on the other hand his speech defect did not arise *de novo,* but was, rather, an exaggeration of a hesitant and

stammering form of speech which was normal to him. It would appear not unlikely, then, that patients who early manifest speech defect almost invariably fall subsequently into the category of simple dementing cases.

SUMMARY.

1. In a series of 74 cases of general paralysis, the earliest onset of the disease was marked, in 57 (77 per cent), by abnormality in the emotional sphere of one of two forms: Irritability (in 29), or a seclusive and apathetic type of reaction (in 15); in 13 cases there occurred first the one and then the other as an early symptom.

2. Little correlation appears to exist between the type of onset, in this sense, and the clinical type of general paralysis which later develops, save with regard to the "manic" cases of the fully developed disease; for the patients with an "irritable" onset contributed 30 per cent of the "manic" cases as compared with 19 per cent of the latter in the group as a whole, while 100 per cent of these cases had an "irritable" rather than a "seclusive" type of onset when either of these forms of emotional alteration had a place among the earliest changes observed. In this respect the expansive cases did not differ from the group as a whole. On the part of the simple dementing cases there was, of the two, a slight tendency toward seclusiveness rather than irritability as an initial or early symptom.

3. Loss of weight, increased tendency to sleep, and perhaps also forgetfulness, when these appeared among the earliest symptoms noted, were without significance with regard to the clinical type of paresis which subsequently developed.

4. Of 11 patients who very early exhibited speech defect, all but one fell later into the category of simple dementing cases.

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GENERAL PARALYSIS AMONG THE NORTH AMERICAN INDIANS.

A Contribution to Racial Psychiatry.

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AND

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Professor Kraepelin, in his classic monograph on general paresis, made the statement that the Brazilian Indians apparently do not have dementia paralytica, while the North American Indians, who are gradually dying out in their reservations, suffer severely from it. More than a dozen years have elapsed since the first publication of Kraepelin's book, during which time the author had not been able to find any authenticated case of paresis in a North American Indian.

In April, 1925, the authors of this paper had the honor of meeting the father of modern psychiatry who was accompanied by the noted serologist, Professor Plaut, of Munich, at the Asylum for Insane Indians in Canton, South Dakota. In view of the experience in attempting to authenticate the statement quoted from Professor Kraepelin's monograph, they were both much interested when the authors informed them that the Yankton State Hospital had as an inmate an almost-full-blooded Indian who was suffering from general paralysis. After all their experiences, they found the case so unusual and so rare that they suggested its publication, with the additional remark that on account of the scarcity of general paralysis among Indians the authors would have to produce sufficient evidence to prove that the patient is really an Indian and that the disease with which he is afflicted is no other than paralysis. Within the last few months the authors have tried to look over the literature of the disease in question but have not been able to find any case of paralysis among Indians described anywhere, with the exception of the mere mention in the statistics of the insane and feebleminded in institutions of the United States, in 1910 published by the Department of Commerce, Bureau of the Census, page 179, of one male Indian who had an alcoholic

psychosis combined with general paralysis. Details about this case could not be obtained from the Bureau of the Census. Upon the authors' request attempts were made to locate the hospital from which the case was reported but without success.

Letters sent by the writers to authorities concerning themselves with Indian psychiatry in the United States had the following result.

Dr. H. R. Hummer, Superintendent of the Asylum for Insane Indians in Canton, South Dakota, writes:

I find in the old records that Fred Tatsup, a male Bannock Indian from Fort Hall, Idaho, was admitted 1/30/05 and died here 2/6/05, the diagnosis being "galloping paresis." You may take this for what it may be worth as there is no further record in the case, so far as I have been able to find. Another, Big Day, a male Crow Indian from the Agency at Pryor, Montana, was admitted 6/1/05 and died 7/3/05 with a diagnosis of paresis. No other notes except that his age was 45. Tatsup was also 45 years of age. Another, Alice Short, a female Bannock from Fort Hall, Idaho, aged 30, was admitted 6/1/05 and died 4/17/09 with a diagnosis of "syphilitic dementia," which I changed to general paralysis of the insane after I had been here a short while (I came 10/1/08). There was no other record in this case until my physical examination dated 12/12/08, which disclosed tachycardia, arteriosclerosis, purulent vaginal discharge, flaccid musculature, diminished muscular activity on left side of body, left ptosis, luetic (?) scars on chest, right side and left knee, normally reacting pupils, diminished right patellar reflex, bed sores, developing contractures of left upper and lower extremities. She soon developed hypostatic congestion of the lungs and died 4/17/09. I might have stated that the dementia was complete from the time I knew her. There were no euphoric symptoms after I came here. The last case, Sam Scabby Robe, a male Blackfeet from the Blackfeet Agency, Montana, was admitted 5/2/19, aged 35, and gave all the classical signs and symptoms, both mental and physical, of a paretic. He was transferred to the Warm Springs, Montana, Institution 12/31/21 and died there something over one month later. The physicians there concurred in the diagnosis.

Dr. Hubert Work, Secretary of the Interior, well known as a neuro-psychiatrist, says:

It may be said that general paralysis is exceedingly rare, even among those tribes that are known to be more or less syphilitic.

Further:

With reference to your letter of July 14, 1925, you are informed that the Commissioner of Indian Affairs is gathering data on the prevalence of general paresis among Indians. About half of the jurisdictions have replied to this circular, but, so far, not a single case of the disease has been reported.

THOMAS T. ROBERTSON, CASE NO. 6040, COMMITTED JUNE 8, 1923.

Dr. H. A. Bolton, Superintendent of the Montana State Hospital, Warm Springs, Montana, kindly gave us the following information:

Concerning your favor of the 21st inst. please be advised that Sam Scabby Robe was transferred to this hospital from the Canton Institution January 2, 1922. At the time of admission the patient was in a state of acute mania, and was partially helpless. Later the acute mania subsided, he became dull and stupid, and incontinence continued to an advanced degree. Because of his poor command of English no informative date could be obtained from him. We were unable to conduct a comprehensive physical examination owing to the resistance offered by the patient. The blood Wassermann in this case was 4 plus, but the spinal Wassermann fluid examination was deferred on account of the weakness of the patient. Scabby Robe died February 5, 1922. The certified cause of death was exhaustion of paresis, confirmed by classical clinical symptoms of general paralysis of the insane. No autopsy was held. . . . . We have had Indians affected with lues, as for instance in the case of Mrs. Bear Blanket, age 55, from the Rocky Boy Agency, near Havre, Montana. This woman had blood Wassermann of 4 plus. She died February 4, 1923. The cause of death being assigned to an intercurrent disease. This was a suspicious case, but the spinal fluid examination, although 4 plus, did not hold sufficient evidence to justify a diagnosis of paresis, nor did the physical examination reveal typical symptoms. . . . . Although Indians committed to this institution are few in number over a period of years, I have always been of the opinion that syphilis in the American Indian seldom attains the major involvement of paresis.

These few notes, of course, do not prove that there might not have been a few more cases of Indian paralytics although they have not been reported heretofore in literature or otherwise. The fact, however, that as yet no such case has been given the attention it deserves, the fact that the authors have not heard of any other cases though they have made efforts to learn of them, and last, but not least, the authority of Professor Kraepelin who during his recent travels through the United States and Mexico has made this particular problem of the occurrence of dementia paralytica among Indians a special study—all this seems to make it worth while to follow the suggestion given the authors and to submit a careful consideration of the case to the medical profession.

Thomas T. Robertson (the photograph herewith reproduced shows this man to possess the typical features of his race), born in Veblen, Marshall County, South Dakota, a farmer by occupation, was admitted to the Yankton State Hospital June 8, 1923, about two months after the onset of his mental derangement. He is a 53-year old married man, the father of six children.

He is six feet one inch in height and weighs 177 pounds. The circumference of his head is 58½ cm., bi-parietal diameter 13 cm., occipito-frontal diameter 20 cm., brain volume 1580 grams, cephalic index 0.65, trunk length 49 cm., leg length 99 cm., stretch of arms 185 cm. Color of skin is light bronze, iris is brown, hair is deep black in color, of regular quantity and distribution. General nutrition is fair, size and tone of muscles normal. There is an ankylosis of the left elbow joint as the result of an injury. Right inguinal hernia descending into the scrotum. His appetite is good, bowel movements twice to three times a day, urination about four times in twenty-four hours. His general feeling is that of well being, euphoria; he complains about occasional frontal headaches. Fifteen teeth are missing, three abscessed teeth were extracted by the hospital dentist. The lungs are emphysematous with very little expansibility of the posterior lower borders. The pulse is regular, standing 72, sitting 68, reclining 54. The heart limits are somewhat dilated to the left and also to the right, the area of dullness over the aorta is a little broader than usual. The heart sounds are distinct but somewhat dull; blood pressure 210178. Muscular power 90 kg., as tested with the dynamometer. His hearing is slightly impaired.

He is very unsteady in gait, which is typically paretic in character; the coordination of muscles is greatly impaired as regards the lower extremities. He is able easily to place the tips of his fingers together or to touch the tip of his nose with his index finger, but is not able to touch the knee with the heel of the other foot. Tactile and algetic sensibility are regular; as to the stereognostic sense he recognizes a box of matches and a pencil as such, but feels a silver dollar as a cross and a slip of paper as a dime, and cannot make anything out of a hand-brush that was given to him. The Romberg test is markedly positive; the pupils are contracted in size, irregular in outline, the right pupil is somewhat smaller than the left; reaction to light is absent, to accommodation extremely sluggish. The conjunctival, corneal, bicipital, abdominal, cremasteric, patellar, and plantar are present; both Achilles and both radial reflexes are absent; there is no Babinsky, Oppenheim, nor Gordon reflex. Patellar and ankle clonus are absent. There is a marked typical paralytical tremor of speech.

Laboratory findings: Blood Wassermann, June 12, 1923, two plus; June 20, 1923, two plus; May 28, 1924, two plus. Spinal fluid Wassermann, August 14, 1923, four plus, cell count 160, gold test 5555555522, globulin increased; May 14, 1924, after an intensive neoarsphenamine treatment, Wassermann four plus, cell count 20, gold test 5555542000, globulin increased.

Mental state: When last examined in April, 1925, he was partially oriented as to the place. He knew that this was Yankton, but did not realize what kind of a place he was living in. As the date he gave the second and third months of 1924. His memory is very poor now, his answers often irrelevant. He has several delusions of grandeur. He has two million dollars in a bank. He "takes care of all the houses, all the horses, all the cattle, all the farms, and everything." He is to be married to a young

"preacheress" of a very good family. He is the best man in the world next to Jesus Christ. When he marries that girl he will be able to make people very rich; he is going to be a powerful man; he will become President of the United States. The Lord has appeared to him several times in dreams and he is proud of these visions and attaches great importance to them. On the ward he behaves quite well, is fairly clean in his habits. His insight into his condition is extremely poor and so is his judgement about his fellow patients. He is always happy and when asked to do so, he will gladly sing some of his Indian songs and dance some of his tribal dances. He runs a floor polisher on the ward and does other coarse work possible with his incoordinate movements.

Diagnosis: Dementia paralytica. Mesaortitis syphilitica. Volumen pulmonum auctum.

The following family history was given by Dr. John Sutherland of Britton, South Dakota. "In an early day in the Territory of Dakota a Scotchman called Tom Robertson, a large powerful man who evidently had some breeding in addition to a strong personality, joined the Sisseton-Wahpeton tribe of the Sioux Nation. He lived as a squaw man on the Sisseton Reservation, marrying a full-blooded Indian woman and had several children. His son, the second Tom Robertson, the grandfather of the patient, also married a Sisseton woman; his oldest son, the third Tom Robertson, was a perfect blonde with fair skin, blonde hair and blue eyes, a perfect replica, or reincarnation of the original Scotchman. His son, the patient, the fourth Tom Robertson, is said to have been a dominant figure among the Indians on the reservation. He was a profound periodical alcoholic, the hard man of his tribe. Though married and the father of six children he could choose at will among the young squaws of the community—and did." Dr. Sutherland adds to his well elaborated report that the generation of Indians on this reservation is syphilitic.

The description given above does not admit of any doubt as to the diagnosis of the case nor as to the race to which the patient belongs. It is of interest to learn that even here we find a white man among the ancestors. It appears furthermore of the greatest importance not that an Indian has been found affected with general paralysis, but that such a case is so rare that it is really regarded as a curiosity, a fact that very decidedly calls for explanation.

Syphilis among the Indians is very common, according to the statements of a great number of authors, and it is very frequently, almost proverbially, said by people living near Indian reservations that the great majority of the members of the red race have syphilis. Wassermann surveys were attempted but did not yield the desired

results on account of the resistance on the part of the Indians. Dr. Work, in his letter, reports this:

> In the fall of 1923, the Indian Office detailed Dr. Don J. Lynwalter of the Laguna Sanatorium, to make a Wassermann survey of the Pueblo Indians. The Indians were much opposed to the survey, and after more than four months of persuasion, only 426 had been induced to submit to the test. Of this number 43, or about 10 per cent, were found to be positive. The greater part of those who were examined were school children. The adults objected to giving their blood on the ground that God gave their blood to them and they could see no reason why they should give it away to the white man.

The question arises why dementia paralytica as a generally acknowledged post-syphilitic disease, is so extremely rare in that race as compared with the conditions present in the population of the United States or of other countries. It has been agreed upon, it is true, that the disease occurs most frequently in the civilized countries and that natives of regions where there is a lower civilization and where the struggle for existence is less exhaustive, are comparatively free from it, and it has been stated that members of such races or tribes found to be affected with general paralysis have either brought it back from their sojourn in Europe or else have become "Europeanized" in their habits of life. Thus negroes coming from Africa to Brazil are not subject to the disease, while those born and raised in South America under civilized conditions are susceptible to paresis. The affection is more frequent among the civilized Arabs of Cairo than among the less cultivated Algerian branches of the race. It has been declared that some countries are free from general paresis though they have accepted European culture, such as Iceland, but it must not be forgotten that the regions referred to are all more or less isolated from the general means of communication between nations, and that syphilis there, still is, or until a very short time ago was, unknown; and where there is no syphilis there is no general paralysis, as we know today.

On the other hand we know that a very great part of the Indians of the United States, even those who live in the reservations, have to some extent accepted the white man's habits and especially one referred to as being the chief stimulating factor in producing general paralysis, the excessive use of alcohol. We

should, therefore, following the Europeanization theory of the occurrence of general paralysis in other than the so-called civilized world, except a greater frequency of the disease in Indians than is actually found among them, hence we must search for another more satisfactory explanation for the rarity of the affection in the red race.

A great many instances in the 17th, 18th, and 19th centuries have taught us that in those places where syphilis had not been known before and whether it was imported through the expansion of civilization or through being opened for the general trade and mingling of nations, the disease over-flowed the population in the form of a very severe epidemic from which the great majority of the inhabitants suffered, exacting an enormous number of victims. Thus we know that in the 17th century in Scotland the invasion of Oliver Cromwell's army was followed by a horrible invasion of syphilis, known in history as Sibbens, and also in other countries the march of culture was accompanied by similar conditions, by an endemic called Radesyge in Norway and Sweden, and the Ditmarshic disease in Holstein, and a few decades ago some parts of southern Russia were nearly devasted and decimated by the importation of syphilis in regions where it had never been seen before. Considering this and also the fact that other infectious diseases, such as leprosy or measles, when intruding themselves into a place never visited by them before have presented themselves in much severer form than in their habitual home countries, we have come to the conclusion that syphilis, too, going through several generations in the same region manifests itself in a gradually milder form than at the time of its first appearance.

History teaches that in the very last years of the 15th and during the whole of the 16th century there were several dreadful epidemics of syphilis starting in the southern and western European countries and rapidly spreading all over the continent. According to the reports of that time the disease had the character of a plague, affecting the old and the young, women and men, especially those of the higher classes of society, but not sparing any class nor any caste. The thought comes to one immediately that then the disease must have been as new in Europe and must have found a soil as unprepared and as lacking in immunization as the smaller sections mentioned above. There is an old theory

assuming that prior to the era of Columbus, syphilis had not been known in the old world at all and that the first discovery of the new continent imparted the disease to the discoverers. This would mean that syphilis had been an affection of the red men sent over to the white race as their first greeting. Many of the modern authors are inclined to declare that theory as a legend, as a romantic, merely invented tale of the revenge of fate which has punished the Europeans for their cruelty towards their new brothers. They look at this thought as a "*pia fraus*," as something "*non vero, ma ben trovato.*"

Considering, however, the fact that syphilis becomes milder as it grows older with the generations of a nation, the authors feel that the relative absence of general paralysis among the Indians can be explained only by the old age of syphilis in the race. If the theory, which Kraepelin declares is well-grounded, of the new world being the original home of the disease be true—and in the authors' opinion it is true—then it may be accepted that the virulence of the spirochete, or in other words and better, that the susceptibility of the individual to the germ and its activity has decreased to such a degree as to produce a great resistance against the neuro-syphilitic manifestations and especially general paralysis, while in other races the disease being comparatively recent, such a resistance has not yet been acquired. Single records show a slight decrease of general paralysis being already noted in European countries; thus in England the proportion of the paretics to the number of total admissions sank between 1888 and 1897 from 8.7% to 7.8%, and, according to Kraepelin, similar statements have been made from the Hospital for the Insane at Dalldorf near Berlin, but, of course, such dissociated and isolated statistics do not prove anything. From the time of the infection of a nation with syphilis two or three centuries are required in order to create a condition in its members that makes them susceptible to dementia paralytica. The affection seems to have been unknown in Europe until about the era of the French revolution. It then seems to prevail in the country for a certain period of several centuries duration, to decrease very slowly but gradually and finally to disappear so that among the Indians it might have been present some time ago while now only very few members of the race are found to be sick with paralytic dementia. Thus the occurrence of the

disease in question seems to be of an episodic character in the history of a race, nation, or tribe.

The rarity of general aparalysis among Indians being an indisputable fact, it therefore admits of two very important conclusions. The one is that the acceptance of the importation of syphilis from America to Europe at the time of the discovery of the new world gains a greater credence and, provided that the authors' deductions are right even seems to be proved to full extent. The other conclusion is that if after a long period of time the spirochete loses the power of producing general paralysis in that race where it has prevailed long enough, the prospects are that also the white race might finally gain a similar resistance so that in the future general paralysis might decrease and finally also disappear among its members.

CARBON MONOXID POISONING.*

Mental and Neurological Changes in a Case of Acute Carbon Monoxid Poisoning with Partial Recovery.

By MILTON C. BORMAN, M. S., M. D., Philadelphia.

The following case report illustrates the insidious nature of carbon monoxid poisoning the period of recovery, typical in these cases, and the development of secondary mental and neurological changes from which there has been an unexplainable partial recovery. Many reported cases give evidence of a psychosis prior to the gas poisoning, or their authors have been able to secure no history whatever. In our case, the patient was a capable, steady, hard working young man, filled with ambition and interested in the world about him. His present lack of ambition, loss of interest in his surroundings and himself, and absence of moral tone stand in sharp contrast to his previous personality.

The patient, a white male, 41 years old, a pearl button cutter by occupation, had retired in a moderate sized bed room in which there was a gradual leak in an illuminating gas pipe. When discovered 24 hours later, he was taken to a hospital. He was described as being in coma. His pupils were dilated, and would not react to light. Respirations were labored with a rate of 50 per minute. He was cyanotic, and there was visible engorgement of the veins in the neck. He was unable to open his mouth. The heart rate was from 150 to 160 per minute, with cardiac dilatation both to the right and to the left. There was a systolic thrill over the apex. Large visible fibrillations were seen over the chest. Both lungs were full of râles, and there were symptoms and signs of pulmonary edema. His abdomen was hard. The extremities showed tetanic contractions from three to five minutes apart, and the deep reflexes were exaggerated.

During the following two days, there was gradual recovery. Two weeks later he was sitting up, and 20 days after admission he was sent home. He had apparently recovered, and remained well until nine days later when he became irritable, did not care to dress or wash himself, refused to sit down for his meals, but ate them standing before the mantel-piece. He finally became confused, abusive, and violent, and was sent to the Philadelphia General Hospital. An examination revealed a very clouded sensorium,

* Abstract read before the Philadelphia Neurological Society on October 23, 1925. From the Service of Dr. M. H. Bochroch, at the Philadelphia General Hospital.

tremors, athetoid movements, exaggerated deep reflexes, generalized muscular spasticity with fibrillary twitching, polyneuritis, incontinence of urine and feces, and three healed areas each two centimeters in diameter on the back of the lower right leg.

Again there was gradual recovery during which there were found impairment of temperature perception over the lower extremities, weakness, ataxia, and adiadokokinesia. These changes were more marked on the left than on the right side. When asked to shake hands he would not perform the action requested despite his avowed understanding of the question asked. Instead, he would touch his nose, rub his hands together or perform some other foreign movement.

Recovery continued, and 47 days after admission he was discharged. Twenty-six days later, his knee jerks were still exaggerated, there were decreased power in the left upper extremity, a left digital tremor, and hypoesthesia over the fifth finger of the left hand. Mentally, he seemed somewhat excited and there was memory defect with impaired judgment. No definite amnesia was demonstrable. Four months later, there was apparent complete recovery with the exception of his mental state. The patient lost interest in his personal appearance, lacked ambition, and had outbursts of temper during which he would swear violently contrary to his former habits. He performed silly actions, indulged in alcoholic beverages, and was unable to hold a position despite his good physical condition.

From the foregoing, we note recovery from the immediate toxic effects of illuminating gas poisoning, an interval of nine days of clarity without apparent symptoms, followed by a rapid regression with development of numerous mental and neurological changes from which there has finally been complete recovery with the exception of the mental state.

The changes observed suggest a wide-spread, generalized disturbance of the central nervous system as summarized in the following table:

Tremor.	
Hypertonicity	Basal ganglia.
Athetoid movements	Basal ganglia or upper cortico-spinal neuron.
Spasticity.	
Decreased motor power.	
Exaggerated deep reflexes.	
Adiadokokinesia	Upper cortico-spinal neuron.
Impaired temperature perception	Lateral spinothalmic tract or optic thalmus.
Muscle, tendon, and joint sense impairment	Posterior columns or optic thalmus.
Fibrillary twitching	Lower motor neuron.
Polyneuritis	Peripheral nerve trunks.

The inability to perform actions by a patient, who has no disturbance of understanding and is without palsy, as shown in our case, has been called "psychomotor apraxia." This phenomenon has been referred to by H. Pineas[1] and Kleist, who place the lesion responsible for the psychomotor disturbance in the basal ganglia.

Chemical Blood Changes in Carbon Monoxid Poisoning.

While illuminating gas contains other toxic elements, carbon monoxid is by far the most important. Chemically, it has an avidity for hemoglobin which E. H. Starling[2] states is 140 times that of oxygen. Other authors place this figure much higher. This affinity causes a rapid displacement of oxyhemoglobin by carbon monoxid hemoglobin, and the immediate toxic effects of the poison are therefore caused by anoxemia. The symptoms produced are roughly in direct proportion to the concentration of the gas in the air breathed. It has long been known that carbon monoxid hemoglobin produces a characteristic spectrum easily recognized with the spectroscope. Clinically, the blood is described as being a cherry or scarlet red in color. Several chemical tests have been described for the detection of carbon monoxid in the blood, but perhaps the best is that reported recently by R. R. Sayers and W. P. Yant.[3]

Central Nervous System Changes in Carbon Monoxid Poisoning.

Henry S. Forbes[4] and his co-workers say that carbon monoxid asphyxia causes a rise in intracranial pressure which shows two distinct elevations; first, during asphyxia, caused by the rise in

[1] Pineas, H.: Ztschr. f. d. ges. Neurol. u. Psychiat. 93:36 (Sept.), 1924. Abstracted: Clinical and Anatomic Findings in a case of carbon monoxid poisoning. Arch. Neurol. and Psychiat., 13:509 (April), 1925.

[2] Starling, E. H.: Human Physiology. 1154, 3d ed., 1920.

[3] Sayers, R. R., and Yant, W. P.: The Pyrotannic Acid Method for the Quantitative Determination of Carbon Monoxid in Blood and in Air. Dept. of Commerce. Bureau of Mines, Technical paper 373.

[4] Forbes, H. S., Cobb, Stanley, Fremont-Smith, F.: Cerebral Edema and Headache following Carbon Monoxid Asphyxia. Arch. Neurol. and Psychiat., 11:264 (March), 1924.

arterial pressure; second, after asphyxia, produced probably by the edema. H. Ruge [5] states that softening and changes in the vessels in the lenticular nuclei are typical. In cases of moderately severe poisoning, he found within 24 hours fatty degeneration in the ganglion cells together with small hemorrhages into the perivascular spaces. After two days there occurred softening in the lenticular nuclei, which was well marked in four or five days. He believes that injury to the nerve cell is the primary process, and that the thrombosis commonly found follows it. R. M. Stewart [6] reports bilateral softening in the corpus striatum and softening with hemorrhage into the deeper layers of the cortex, cerebellum, and other parts of the brain. Bernard J. Alpers [7] has reported a mild case of carbon monoxid poisoning with partial recovery in which the symptoms suggested changes in the lenticular nuclei, pyramidal tract, cerebellum or ganglion cells, and the bulbar nuclei. Wilson and Winkelman [8] have reported a case in which the major changes were in the third and fourth cortical layers. They [9] have also reported a multiple neuritis following carbon monoxid poisoning. Fejer [10] described changes in a patient who recovered which were caused either by hemorrhage or softening in the optic radiations or in the cuneus. The most constant findings of G. Scheiding [11] were extravasations and thromboses in the retinal plexus. Siengalewicz [12] says that carbon monoxid poisoning dama-

[5] Ruge, H.: Contribution to the Pathological Anatomy of Symmetrical Disease of the Corpus Striatum in Carbon Monoxid Poisoning. Arch. f. Psychiat., 64: 150, 1921-1922.

[6] Stewart, R. M.: A Contribution to the Histopathology of Carbon Monoxid Poisoning. Jour. Neurol. and Psychopath., 1: 105, 1920-1921.

[7] Alpers, B. J.: Nonfatal Carbon Monoxid Poisoning. Am. Jour. Med. Sc., 170: 390 (Sept.), 1925.

[8] Wilson, G., and Winkelman, N. W.: An Unusual Cortical Change in Carbon Monoxid Poisoning. Arch. Neurol. and Psychiat., 13: 191 (Feb.), 1925.

[9] Wilson, G., and Winkelman, N. W.: Multiple Neuritis Following Carbon Monoxid Poisoning. Jour. Am. Med. Assn., 82: 1407 (May 3), 1924.

[10] Fejer, G.: Am. Jour. Ophth., 7: 522 (July), 1924.

[11] Scheiding, G.: Erlangen Dissertation, 1888.

[12] Siengalewicz, S. S.: The Action of Neo-salvarsan and Carbon Monoxid on the Choroid Plexus and Meninges. Jour. Pharmacol. and Exper. Therap., 24: 289 (Nov.), 1924.

ges the choroid plexus which is a protective mechanism, and renders it permeable to trypan blue.

There is a difference of opinion among authorities whether the lack of oxygen is solely responsible for the changes produced, or whether the carbon monoxid forms a stable compound, carbon monoxid hemoglobin, which exerts a specific effect upon nerve tissue. H. W. Haggard [13] has recently studied the effect of carbon monoxid upon cultures, *in vitro,* of neuroblastic tissue of the chick. No effect was noted upon the growing cells, and the author concluded that the gas has no specific effect upon nerve tissue, but acts only through the asphyxia incident to the formation of carbon monoxid hemoglobin.

Further, the exact morbid anatomy and the reasons for the apparent selective affinity of the toxin for certain regions of the central nervous system are not clear. Various explanations have been offered:

Concerning the usual changes in the globus pallidus, F. Delafield and T. M. Prudden [14] state that thrombus formation may easily result in this region due to the ease with which the vessels may be damaged for they are long and thin, without vasovasorum.

R. M. Stewart [6] says, concerning the cortical changes, that anoxemia, alone, could not produce the observed changes in infragranular layers. He inclines more to the view that the carbon monoxid acts like other exogenous toxins, and because of the abundant blood supply in the cortex the concentration of toxins may account for the changes observed. He also mentions the attending factor of thrombosis.

Concerning the selective action in the corpus striatum, Stewart does not agree with Kolisko,[15] who believes that on account of the length and peculiar distribution of a special artery supplying the caudate nucleus, blood passing into it has to flow against the normal current. Hence, when the general blood-pressure is very low, as in gas poisoning, a tendency to stasis and thrombosis occurs.

[13] Haggard, H. W.: Studies in Carbon-Monoxide Asphyxia: II. The Growth of Neuroblast in the Presence of Carbon Monoxide. Am. Jour. Physiol. 60: 244 (Apr.), 1922.

[14] Delafield, F., and Prudden, T. M.: Textbook of Pathology. 480, 12th Ed., 1922.

[15] Kolisko: Wien. klin. Wchnschr., March 16, 1893, p. 191.

Kolisko regarded its affection on each side as the cause of the bilateral softening of the corpus striatum. Stewart states that at present we can offer no adequate explanation for the apparent selective affinity of the toxin for the corpora striata.

Jacob [16] (quoted by C. and O. Vogt) believed that a physiochemical reason might account for the peculiar selective affinity of the gas for certain regions of the nervous tissues.

E. Hedinger [17] suggests the pre-existence of changes in the vessel walls as the possible predisposing factor. He has reported two cases of wide-spread thrombosis. In the first case, the great saphenous veins were varicose. In the second case, the coronary artery showed arteriosclerotic changes, although no other similar vessel changes were found throughout the body.

Wachholz [18] and Wiskowski [19] suggest that the endothelium lining the vessels of the brain and central nervous system possesses affinity for carbon monoxid gas similar to that of the erythrocyte.

F. Hiller [20] has reported a case in which he emphasizes the importance of study of the entire brain although the toxin is supposed to have a predilection only for certain portions thereof. His patient died on the 12th day, and at the autopsy there were edema, congestion, meningeal hemorrhage, cortical and medullary hemorrhage, and sharply localized softening in the pallidum. Microscopically, he found softening in the cortex chiefly in the sixth layer, medulla, fascia dentata, pallidum, and substantia nigra. The spinal cord was free from any change.

Summarizing, we have the following explanations for the apparent selective affinity of carbon monoxid for the central nervous system: (1) Anatomical peculiarities and special arrangement of the vessels; (2) abundance of blood supply; (3) unexplained

[16] Jacob in Vogt, C. and O.: Erkrankungen der Grosshirnrinde. Jour. f. Psychol. u. Neurol., 28: (Sept.), 1922.

[17] Hedinger, E.: Ueber Thrombose bei Kohlenoxydvergiftung. Virchow's Arch. f. Path. anat., 246: 412, 1923.

[18] Wachholz: Tod durch Vergiftung im Handbuch der gerichtlichen Medizin, herausgeg. von A. Schmidtmann. A. Hirschwald, Berlin, 1905.

[19] Wiskowski, B.: Zur Kasuistik der Kohlenoxydvergiftung. Casopis lekaruv ceskych. 1921, Nr. 19; ref. Zentralbl. f. inn. Med., 1821, Nr. 33.

[20] Hiller, F.: Ztschr. f. d. ges. Neurol. u. Psychiat., 93: 593 (Nov.), 1924. Abstract: Pathologic Changes in the Central Nervous System after carbon monoxid poisoning. Arch. Neurol. and Psychiat., 14: 86 (July), 1925.

physio-chemical phenomena; (4) pre-existent changes in the walls of the vessels affected; (5) special affinity for the toxin exerted by the endothelium of the vessels of the central nervous system.

Discussion.

The interesting feature in the case herein reported is the clearing up of neurological changes which were indubitably secondary to the carbon monoxid poisoning.

In Fejer's case,[10] previously referred to, the only residual symptom was blindness occurring four days after the onset. Gradually the patient improved until his sight was practically normal at the end of four or five weeks. This author explained restoration of sight by absorption of a hemorrhage which had affected the visual radiations or the cuneus, or that the disorder of circulation, whatever its nature, had come to an end.

In our patient, it is certain that there must have been definite changes in the central nervous system. The great sensitivity of the nerve cell to alterations in nutrition has been proved. For example, the shutting off of the blood supply even for a very short time produces degenerative changes. The reasoning, therefore, that the ultimate establishment of collateral circulation might account for the clearing up of neurological signs and symptoms in this case would be unsound because there was too great an interval of time before restoration of function to accept this possibility.

The rich and abundant blood supply to the various regions of the central nervous tissue affected may help us in our explanation, although this, too, is only a possibility. We might suppose that damage to any of the blood vessels in the presence of an excess blood supply would produce very little if any change. The rupture, however, of a vessel with the resulting infiltration of the blood into the nerve tissue immediately surrounding the site of rhexis might produce signs and symptoms of pressure and malnutrition of certain nerve cells. The clearing up and absorption of these areas of hemorrhage by glitter and endothelial cells might account for the ultimate improvement shown by our patient. Such a process would imply an incomplete recovery. For certainly damage would have been done in the areas of the vessels affected.

The theory that there may be retention of carbon monoxid hemoglobin with ultimate change has been held by certain workers.

Another explanation is that another toxin may develop, an endotoxin or toxic by-products, produced perhaps by degenerative changes in the central nervous system or other parts of the body.

Spiller [21] has stated that the gradual development of secondary signs and symptoms is produced by the slowly progressive degenerative processes in the areas affected. This explanation might apply in our case, but I am at a loss to explain the gradual disappearance of the secondary signs and symptoms.

It is clear, however, that whatever the process, disordered function usually means corresponding altered cellular metabolism. In the light of our present pathological conceptions of the central nervous system, the writer believes that the changes produced in the cases reported herein have resulted from disordered nutrition, the effects of which were partially overcome. What constituted these changes, whether quantitative or qualitative, or perhaps both, we are in no position to state. Such a confession of ignorance should not discourage. Instead it should constitute a challenge, and be accepted as part of our scientific "positive agnosticism" recently described by Julian Huxley.[22] We can be moderately certain, however, that the damage to the nerve cells, themselves, if any at all, must have been slight, except in those cells, the altered metabolism or degeneration of which has produced the altered mental state.

Summary and Conclusion.

1. A case of accidental carbon monoxid poisoning is reported in which the patient showed evidence of wide-spread central nervous system changes from which there was apparent recovery, followed again by numerous mental and neurological disturbances with ultimate recovery, except for the mental state.

2. The chemical alterations in the blood and clinical tests thereof in carbon monoxid poisoning are mentioned.

3. The anatomical changes in the central nervous system following carbon monoxid poisoning are discussed together with the various explanations offered for their occurrence.

[21] McConnell, J. W., and Spiller, W. G.: A Clinicopathologic Study of Carbon Monoxid Poisoning. Jour. Am. Med. Assn., 59: 2122 (Dec. 14), 1912.

[22] Huxley, J.: Essays of a Biologist. Knopf, 1923, p. 239.

4. The prognosis in these cases, even after the secondary sequelæ have appeared, is occasionally very hopeful.

5. Mental changes resembling a definite psychosis may be the only sequelæ of carbon monoxid poisoning.

6. A complete pathological picture in carbon monoxid poisoning is not yet established.

7. The various explanations advanced for the apparent selective affinity of carbon monoxid for the central nervous system are not completely satisfactory.

8. The clinical picture in these cases varies greatly depending upon the organic or functional changes produced.

9. Clinically, following carbon monoxid poisoning, we may have:

a. Immediate death.

b. Recovery from the initial disturbances without secondary changes.

c. Recovery with secondary changes.

d. Death caused by the secondary changes.

e. Various grades of recovery from secondary changes with or without mental or neurological sequelæ.

The writer wishes to acknowledge the inspiration furnished by Dr. Charles W. Burr, Philadelphia, in the study of this case and its preparation for publication.

A STUDY OF PSYCHOSES OCCURRING IN RELATION TO CHILDBIRTH.

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Introduction.

This paper is a report of the study of 72 cases of mental disorder associated with childbirth which were admitted to Bloomingdale Hospital between the years 1911 and 1923. The study was made in an attempt to determine whether or not there is a specific psychosis occurring in the pregnant and post-partum state, and whether or not the common factor, childbearing, influences in any particular manner the symptoms and prognosis of the usual clinical entities. It was felt that nothing could be gained by including cases in which the psychosis had existed prior to conception and, as a consequence, we chose only those cases, with one exception mentioned elsewhere, whose onset occurred during gestation, labor or four months post-partum.

Normal Findings.

Before detailing the findings in the cases developing psychosis, it should be pointed out that the so-called normal women present many physical and emotional changes which indicate the severity and complexity of the readjustment made by every woman who becomes pregnant. To quote from Williams,[1] "Every portion of the maternal organism reacts to a greater or lesser extent under the influence of pregnancy." The general metabolism of the expectant mother is altered. She increases in size, gains weight rapidly, stores nitrogen, fats and important inorganic elements, such as iron, calcium and so forth. The digestive tract shows disturbance; first, with the common manifestation of "morning sickness," and second, later on, with a marked tendency to constipation due to the pressure

of the enlarged uterus on the rectum. Similarly, the pressure extends to the ureters so that a mild nephritis is a frequent finding. An added load is laid upon the organism by the changes taking place in the endocrine system. The thyroid enlarges as a rule; the anterior lobe of the pituitary also increases to a very considerable extent due in part to the growth in size and number of the "Hauptzellen." The suprarenal cortex becomes larger. The mammary secretion is established. A constant leucocytosis is discovered. The foregoing facts indicate to some degree the physical realignment and the opportunities for a certain amount of toxic absorption necessarily undergone by every gravid woman.

In addition to the physical readjustments occurring inside the body, certain exhaustive strains are superimposed upon it. Principal amongst these comes the problem of securing a proper amount of sleep. Especially during the latter part of gestation, the pregnant mother often experiences difficulty in resting. She suffers from backache, pains in her legs; breathing is often labored when lying down; frequency of urination due to pressure on the bladder interferes with a proper night's repose and finally the very fact that she faces the certainty of a trying period serves to augment the tension under which she lives and to make sleep even more difficult to obtain.

This leads to a consideration of the mental changes which are generally noted in the pregnant woman. While obstetricians point out that no general rule exists which will permit one to predict the mental state of the woman as she is carrying the child, they find that, during the first few months, the expectant mother tends to be somewhat irritable and despondent. This condition is then succeeded by a feeling of well-being which lasts until the termination of the pregnancy. In addition, although the nature of the vomiting of pregnancy provides grounds for much discussion, it is generally conceded that there enters into it a large neurotic element. Furthermore, the presence of capricious and unreasonable tastes, appetites, and desires are so well recognized as to be considered normal features of the pregnant state.

In spite of these evidences of physical and mental stress, only a small number, one in a thousand according to one authority,[3] reacts by psychotic manifestation. For this reason we hoped to be able to define some common characteristics in those who do.

Method of Study.

Our attention in each case was directed to an investigation into the various factors which were to be considered of value in producing the clinical picture. We studied the age, the order of pregnancy, the hereditary background, the previous mental and physical makeup as evidenced by personality, previous psychotic or neurotic episodes and physical disabilities of one sort or another. We examined the marital adjustment, noted the conditions during pregnancy and the immediately precipitating factors which were subdivided into physical and mental. The physical status on admission was looked carefully into. Finally, as well as we were able, we ascertained the eventual course of the cases.

Diagnostic Findings.

In comparing the cases, we found that they divided themselves clinically into certain groups so that, instead of having one type of psychosis, we had several. Diagnostically, the cases fitted under four major headings: (1) Delirium; (2) manic-depressive psychosis; (3) schizophrenia; and (4) psychoneurosis.

In view of the fact that the reaction types varied so distinctly, it was thought advisable to tabulate the cases according to the clinical diagnosis and to study the results by groups rather than the series as a whole.

Delirial Reaction Type.

The delirious cases either on admission or at some time shortly before presented a picture of: (1) Confusion or clouding of consciousness with disorientation; (2) hallucinations; (3) the affect of fear and apprehension; and (4) irrelevant, rambling, disconnected talk. On going over these cases, two distinct groups were found—namely those who had, or had had, definite toxic processes at work and those who had not.

Toxic Group.—In the first division, there were 11 cases. Their ages varied between 20 and 40, with no particular period predominating. Eight of the 11 cases were primipara—three were multipara whose previous labors had been normal. From the hereditary standpoint, four were free from psychotic traits in their forebears, four had one member psychotic and three, two or more. The per-

sonal history shows the individuals to have been free from psychotic traits and to have suffered from relatively little environmental stress. During the pregnancy, the condition was generally good, the mental condition in all being normal; five presented no physical abnormality; two developed nephritis, one had influenza, one had painful varicose veins and two were under par physically. The onset of the delirium occurred within five days after labor in seven of the cases, within two weeks in one, and in the others after a month had elapsed. All of the cases had one or more definite toxic factors, preceding the psychosis. In three there were pneumonia and influenza; two had pyonephrosis; two had breast abscesses; two had eclampsia; one had pyemia. In two of the patients with one of the above factors, the condition had been complicated by a prolonged administration of drugs. As many of these cases were not admitted to this hospital until the acute condition had somewhat subsided, physical examination revealed little except that the dehydrated appearance, loss of weight and exhaustion pointed to the presence of a previous toxic cndition. In only one case was there a fever of more than 100. Five had a leucocytosis from eleven to fourteen thousand with a relative polymorphonuclear increase and four had albuminaria with casts.

Representative of the clinical picture of these cases is the following:

CASE 10.—(A. W.) On the fourth day of the puerperium suddenly developed a temperature of 104°. For the next two days, she was free from fever, but then her temperature rose to 107° and pyemia developed. During the next several weeks, several abscesses were incised at different times, drained and began to heal satisfactorily. All during the illness she seemed delirious but for the three weeks preceding admission, she was definitely worse. On entering the hospital, three and a half months after the childbirth, she was drowsy under the influence of an opiate. The next day she was cloudy, out of touch with her surroundings and continually muttering a rather infantile gibberish in which she showed some rhyming and distractibility. Physically nothing very definite could be determined. Fresh granulations were coming up at the sites of the different abscesses. Her temperature was only slightly elevated but her lips were dry, tongue coated and her breath foul. Physical examination was negative save for a persistently rapid pulse. B. P. 120/90. The various laboratory tests revealed nothing of significance. Soon after admission, the signs of infection disappeared, but for many months she continued to exhibit random, overactivity, irritability and excitability. Her talk was irrelevant, disconnected

and distractible in nature. She was out of touch with her surroundings. For the last two months of her fourteen months' stay in the hospital, she grew considerably better and was discharged as "Much Improved." She had entirely recovered in two years.

The course in this case is much more prolonged than one would expect for a toxic delirium. In the others it was the same. In five cases it took a year before complete recovery resulted, in another, a year and a half and, in still another, after three years in the hospital, a tendency remained to recurring mild delirious states when exposed to such a simple reducing factor as a cold. Four of these cases are still in hospitals after a residence of two or more years. Concerning the prognosis of these infectious cases, Williams[8] also points out that they "are very tedious and 20 to 40 per cent . . . . failed to regain their mental equilibrium. It is not unusual for the disturbance to last from three to six months . . . ."

Two possible factors accounting for the protracted course in these cases are (1) poor heredity; (2) long continued toxic illness. It is worth noting that all of our cases had some toxic agent acting for a month or more. This may perhaps be regarded as confirmatory of the views of those who look upon infections as the principal if not sole cause of mental disease.

The Non-Toxic Delirium.—We segregrated an interesting group which presented a clinical picture of delirium for which no toxic factor could be ascertained. These comprised twelve of the cases. The ages vary between eighteen and thirty-seven, nine being in the twenties. Eleven of the twelve were primipara. A glance into the heredity showed that aside from one negative family history which was incomplete, all had some ancestor who was neurotic, alcoholic or psychotic, and in nine there were two or more individuals who had deviated to some extent. A study of the personality and makeup of this group showed that six were considered unstable and four of these had had short neurotic episodes. Four others were irregular sexually. In this group, the environmental factors seemed of importance. Ten experienced difficulties in the home adjustments, such as, unstable husbands, financial worries, staying with in-laws and sexual maladaptations. During pregnancy, the physical condition was negative except for one who had a small abscess in the vagina; nine exhibited no mental changes; two irritable and suspicious and a third had transient visions. In ten

of the cases, the psychosis occurred within the thirteenth day post-partum with an acute outbreak of symptoms; in one during the fourth week. A second, who had a post-partum hæmorrhage followed by rheumatism, was never able to pick up strength. She lost weight, became very much run-down and suddenly developed a definitely abnormal mental condition two years after the birth of the child.

No toxic factors were discovered in these cases. At the onset of the psychosis four had no apparent associated physical disorder. Seven suffered from exhausting factors such as prolonged labors, loss of sleep and a long auto ride during labor. One had a post-partum hæmorrhage.

On admission, all exhibited signs of having passed through a severe and debilitating illness, but none showed a fever of over 100°, or had a history of any prior to admission. Several were noted to have endocrine disturbances as indicated by menstrual difficulties, thyroid enlargement, excess of hair, immaturity of development and so forth. It is interesting to note that in practically all the cases of this group entering in recent years when attention has been directed more in those lines, there has been evidence of some ductless gland disorder, so that it is quite possible that the findings might have been more convincing if all these cases had been of recent date.

The laboratory examinations revealed that six of the patients had a leucocytosis varying in between 10,000 and 23,000. Four were negative and two were not done. In accounting for this increased count it should be remembered that many normal cases show this early in lactation. Two of the patients showed a transient albuminaria, without casts; otherwise the laboratory findings were negative.

CASE 23.—(K. S.) A primipara aged 24 entered the hospital in a perplexed, bewildered, blindly resistive state on the 14th day of the puerperium and the second day of her psychosis.

On both sides of the family there were cases of mental disorder. Her father, while never distinctly psychotic, refused to work and was content to be supported by his wife's income. Her mother, a woman of wealth, possessed many psychoneurotic fears and phobias which made living with her a real burden. There were many quarrels between the parents and finally a separation. Each tried to secure the affection of the patient, who was an only child, by petting and pampering her. Nevertheless, she in time

went to college, made a satisfactory adjustment and a year after graduation married. Her married life seemed happy in spite of a marked lowering of her financial status. The pregnancy was welcomed, the gestational period passed without incidents, labor was entirely normal and the first week of the puerperium uneventful. Then, the mother was permitted to see the patient and upset her with many warnings and forebodings—leaving the patient weeping and hysterical for a period of three or four hours. A few days later, the mother eluded the nurse and again disturbed the patient with her vague fears—this time causing the patient's sleep to become broken. Two days later, while preparations were being made to take the patient home, she urged her husband to hurry. "They think me crazy here," she informed him. Her talk soon became irrational and disconnected, her behavior noisy and resistive, making hospital care necessary. Here, she was confused, apprehensive, blindly resistive and talked along in a weak mumbling, scarcely in an audible voice. At times, her replies to questions could be understood and showed that she was disoriented and as a rule irrelevant in her answers. She hallucinated freely in both visual and auditory spheres.

Physically her eyes were dull, her lips dry and covered with sordes, her skin sallow and damp; temperature was normal. The breasts were tense and large from retained milk. There was a slight thyroid enlargement and the hair distribution approached the masculine in type. The heart, lungs and abdomen were negative. Blood pressure 118/82 with a rather rapid pulse. The reflexes were hyperactive.

A moderate leucocytosis was found persisting with varying intensity for several weeks. A blood chemistry revealed an N. P. N. of 43 mgm. per 100 c. c. of blood. This soon dropped to normal. Nothing else could be found to account for her condition.

To summarize, here is a patient who has had a bad heredity, who shows signs of definite endocrine disturbance, who has had many unfortunate influences in her early life. Nevertheless, she remains normal until shortly after her first labor, when, distressed by her unwise mother, she breaks out in a rather typical delirial picture for which no toxic basis can be discovered.

Regarding the outcome of these cases our information is incomplete. Six left the hospital after a residence of two to four months in an improved condition, and it has not been possible to obtain further information concerning them. Of the others, three recovered within a year, two within two years, and the other was unimproved after seven months.

Discussion.—In comparing the two preceding subdivisions of the delirial group, one notes that age is of no significance. Eight of the eleven toxic cases were primipara, and 11 of the 12 non-toxic,

suggesting that individuals of the latter group tended to break down with the first pregnancy. Also the heredity in the latter group showed far more deviations from normal. Furthermore, this group was of unstable makeup, while none of those in the toxic group had ever given any indications of nervous instability. The occurrence of the illness in the toxic group could be explained satisfactorily on a physical basis and psychic factors appeared in the background. On the other hand, the non-toxic cases had many significant elements of a psychic nature to account for their sickness.

We venture to conclude that the toxic cases occur in the more stable individuals and that the psychosis appears to develop in direct relation to a toxic factor. In the non-toxic group, with the evidence of great instability in the heredity, the physical and mental makeup, the individuals, generally speaking, break down with the strain of the first pregnancy and not in relation to any toxin which we were able to discover.

There appears to be a distinct difference existing between the two groups. Although the term "non-toxic" delirium is a negative designation, it is descriptive of our meager findings in the second group. These cases somewhat resemble those of Meynert, described by him as an acute hallucinatory confusion and considered a distinct clinical entity which he labeled "amentia."

A similar group is described by Lugaro in his "Modern Problems in Psychiatry."[4] After linking the word "amentia" to a delirial type of disorder, calling them alcoholic amentia, anœmic amentia, etc. Lugaro goes on to state: "It is evident then that we do not apply the term 'amentia' . . . . because we are able to recognize a specific cause. . . . . In fact, we have come to include in the group of amentia only those cases in which the cause is recognized in a generic and vague manner, those cases, that is, which are connected with the conditions of exhaustion or intoxication, the result of an antecedent disease." He further states that with more careful investigation, the toxic factor in each case will be determined and thus the amentia group will disappear. If this is true, namely, that a toxic factor is definitely at work, then one might reasonably expect that the antecedent history in the two groups might be somewhat similar. They are, in so many ways, different, that it does not seem that a toxic agent will suffice wholly to explain the psychosis.

While also disposing of the amentia group to a large extent, Bleuler [5] does so on the basis that the initial picture will later merge into a condition that can be recognized as schizophrenic or manic-depressive in its main outlines. Many of our cases seem to do this. Some of the cases included among our dementia præcox had an onset somewhat similar to the non-toxic deliria. Nevertheless, we are inclined, for several reasons, to feel that this so-called amentia group is a rather distinct entity. In the first place, the patients tend to succumb at the first pregnancy; in the second, they come from a notably poor stock and are themselves definitely unstable without ever having had any definite psychosis. Thirdly, they show evidences of constitutional weakness and fourthly, they seem loaded with many environmental difficulties.

Bleuler,[6] in his brief discussion of amentia, stresses exhaustion as a factor in the production of the illness. Surely it seems quite possible that these cases represent the result of the exhausting efforts of labor on already susceptible individuals. Without entering into a prolonged discussion, the recent war seems to have fairly demonstrated that exhaustion itself rarely, if ever, produces a mental break. It merely reduces the capacity to resist and thus permits the appearance of symptoms in the more sensitive person. Similarly in a vulnerable individual, the depleting strain of gestation and labor may serve to diminish the adaptive powers of the patient and thus cause the development of the mental abnormality.

Manic-Depressive Reaction Type.

This group included 36 of our cases. Of these 27 were depressed, six elated and three circular.

Depression.—The ages varied between 25 and 40, with no particular period predominating. Nine were primipara and eighteen multipara. In looking back over the family history, we find seven to have been free from psychotic taint. Of the others, alcoholism and neurotic traits were not uncommon, while 12 of the patients had one or more frankly psychotic forebears. The past history was negative for mental disease in 16, three had had mild mental episodes and eight had had previous depressions. Among the prominent etiological factors were marital difficulties which were present in 13, nursing difficuties found in 12; in six, children were unwanted; three suffered from financial stresses. During the preg-

nancy 11 of the patients were entirely normal, five had some physical disorder, six showed dispositional changes, being worried and irritable, and in six others the psychosis began during gestation including one case which developed in the eighth month following influenza. The onset in all cases was gradual.

Some of the depressed cases on admission presented the symptom of confusion along with the depression. On the hypothesis that the confusion might represent a mild delirial coloring, we compared the physical condition of these patients at their onset and their status here with those without confusion. It was noted that toxic and exhaustive factors were much more frequent in the confused depressions than in the non-confused. Of the ten patients with confusion, only one was free from debilitating physical factors; five had toxic factors arising from abnormal labors, two had intercurrent infectious diseases. One was suffering from the after-effects of gas poisoning and another from sunstroke. Of the non-confused, two had toxic factors—namely a lung abscess and a mastitis. The latter occurred five months before admission to the hospital and cleared up rather promptly. None of the others showed any physical factors of a depleting nature. The laboratory findings were negative in the non-confused cases aside from the leucocytosis in the lung abscess. Many of the confused group, however, showed changes. Four had albuminuria, two with casts; one had a high white count and another numerous tubercle bacilli in the sputum.

The following case (No. 24) is typical of the depressed group. Mrs. B, a woman of 30, was admitted to this hospital in a depressed state, three months after the birth of her first child. She had been normal previous to this. Her heredity was reasonably good. One sister was tubercular and had had a nervous breakdown. The patient was a healthy, happy girl. She was married at 25 and made a good adjustment. She was at first disappointed that there were no children, but five years after marriage went through a normal pregnancy. Labor was long and the delivery difficult. Early convalescence was uneventful. She left the maternity hospital on the eleventh day. At home, she was alone. The baby did not thrive. She did not feel well physically, and the home duties and the care of the infant were too much for her. She began to fret, grew careless, and for the first time in her life was irritable and unhappy. She lost interest. Everything was a burden to her and later, even with assistance in the home, the condition did not improve. She became sleepless, depressed and hypochondriacal. Finally, after two or three suicidal attempts, because she felt there was no hope for herself or her baby, she was brought to this hospital. Physically,

she was underweight; the thyroid was slightly enlarged. There was an organic heart lesion and exaggerated reflexes. The pelvic examination was negative. Teeth were negative. The illness ran a typical course; was short in duration and she left the hospital recovered in six months. Since then, she has given birth to a second child and has continued well.

The outcome in these cases was such as we are accustomed to find in the manic-depressive psychosis. Our cases could be followed only for a limited time. Eleven recovered within one year, eight within two years; five were considered improved after a year. One died of tuberculosis, a second committed suicide and a third left at the end of the fifth month unchanged. The confusional element appeared not to alter the prognosis at all.

Discussion.—The depressions, comprising 27 of our cases, represent the largest proportion of patients. As 18 of them had passed through previous labors without developing a psychosis, it does not seem that the fact of the pregnancy alone could account for the illness. Psychic irritants are prominent in this group and apparently determine to a large extent the onset of the illness. It is noteworthy that of the seven cases of the total series in which the onset occurred during the gestational period, six were depressions, favoring the supposition that the situational elements are of significance in the production of this type of disorder.

Of interest, also, is the confusion in a number of them and the concomitant finding of some toxic exhausting element. In the cases with confusion, the heredity is somewhat better and the individuals are more stable. While the number of cases is too small to venture any conclusions, the added physical factor, noted before, seemed to be the deciding factor in precipitating the psychosis.

Manic.—Reference is so frequently made to puerperal mania that we were surprised to find only six among our series of 72.

The number of cases is too small to justify any conclusion being made. Nothing of significance was found. The ages were between 20 and 35. Three had just passed through their first pregnancy and the others had two or more children. The family background was satisfactory in three, one had one psychotic forebear and another an alcoholic forebear. The case history was incomplete in the sixth. Three of the patients were normal previously. Two had had one elation and a third had had three, two of which were in relation to childbirth. There were no outstanding

psychic determinants. The condition during pregnancy was good. The onset occurred acutely within ten days after the labor in three; within three months in the others.

With the onset of the psychosis, two patients showed signs of infections and the third was debilitated from a severe post-partum hæmorrhage. The physical and laboratory findings, following admission here, were without significance.

The case (No. 55) of Mrs. L., is characteristic of this group. This patient, a Jewish woman of 26, was admitted to the hospital in an excited state two weeks after the birth of her first child. She had been normal previous to this, except for a slight lowering of the mood during the menstrual periods. Pregnancy was uneventful. She went to the hospital for delivery, her first time away from her own people. Labor was long. Following this, she got little sleep for the next few nights as the ward on which she was placed was noisy. With the onset of lactation, the breasts were painful. The baby could not nurse and lost weight. The patient worried over this, became irritable, then restless and soon passed into an excitement. Aside from the fact that she developed a breast abscess just following admission, her physical condition was negative. She recovered within nine months.

The outcome in these cases was good. All recovered within one year.

Discussion.—One is somewhat at a loss to account for the discrepancy between the old ideas in regard to puerperal mania and our present findings. We have not been able to uncover any old statistics supporting the statement as to the frequency of manias following childbirth but we have read the account in the old obstetric book of Barker which referred to them as the most common mental ailment subsequent to childbirth. Probably all excitements of any sort were included among the manias. The depressions, coming on, much as ours did, several weeks after labor, usually a considerable while after their discharge from the maternity hospital, were not considered as having any direct relation to childbearing. In our cases, the acute, active ones come, as a rule, shortly after labor. No doubt, the obstetrical hospitals at the present, might show very different percentages from ours.

Circular.—Three of the 28 cases are to be included among the circular type of the manic-depressives. All of these have psychotic heredity. Their physical condition was generally good. Two had been ill before. Aside from these facts nothing of note was found.

Dementia Præcox Reaction Type.

We are accustomed to look upon dementia præcox as showing the first signs about the time of puberty and adolescence. Contrary to this, ten of our cases which presented the clinical picture and outcome of dementia præcox, had apparently been normal at the time of the conception, and had the onset of the illness apparently in direct relation to childbirth.

The ages ranged between 20 and 40, five being between 30 and 40. Three were primipara and seven multipara. The history of the heredity was incomplete in two, negative in three, and in the other five had one or more psychotic forebears. In personality make-up, six of this group were seclusive; the others presented no predisposing traits. Two had had mild psychotic episodes of an indefinite nature, from which they recovered. It is perhaps worthy of note that seven of these cases had marital maladjustments and in four of these, the difficulty was due to the husband. During pregnancy, five were normal, one was rundown physically, three were nervous, and one developed a psychosis following influenza at the eighth month. While the majority of the cases had a slow, gradual onset, it should be noted that three had acute onsets during the first month of the puerperium. At the onset of the psychosis, four had no associated physical factors, four were depleted after long labors, one following a post-partum hæmorrhage, one subsequent to influenza. Aside from loss of weight, the physical condition was essentially negative on admission. There were no important laboratory findings.

The following case (No. 66) is fairly typical. Three days after the birth of her second child, Mrs. M. developed a psychosis characterized by hallucinations, odd ideas and peculiar behavior without confusion and not accompanied by any toxic disorder. She was a woman of moderate ability with rather poor heredity. On the paternal side, her relatives were disposed to circulatory diseases and on the maternal side, to tuberculosis. One aunt was psychotic and two sisters nervous. The patient herself was a three-pound baby and never became very robust. She was of average intelligence with special ability along artistic lines. Her makeup was unfortunate. As a young child she quarrelled with other children. As she grew older she became increasingly sensitive and suspicious. She married at 25, made a good adjustment, but was rather solitary and inclined to believe all conversations referred to herself. There was one normal child born and the patient continued in her usual health. She went on with her art work

until the latter part of the second pregnancy. At the termination of the gestation, she was undernourished and fatigued. Labor was followed by a post-partum hæmorrhage. On the third day of the puerperium, she became restless and talkative, feared she was losing her mentality and kept testing her memory. On the 10th day, she developed an hallucinosis without confusion. She was mentally clear; there were no physical factors found except that there was marked reduction in weight. The disorder has been progressive with slight remissions for three years. She now hallucinates; has fairly well systematized delusions and shows deterioration in her intellect and behavior.

It is worthy of note that in this case, the first confinement was without neurotic sequel. Hence, the process of childbearing in itself would not seem to be entirely responsible. The facts that she was reduced physically from overwork and had had a post-partum hæmorrhage with the second pregnancy are of importance.

We have been able to follow many of these cases for five years and none has recovered.

Discussion.—An outstanding feature of the dementia præcox cases is that all were of the paranoid type. This is interesting in view of the fact that they occurred rather late in life and after then patients had passed through one or more critical periods such as puberty, marriage, or, in some instances, previous childbirth. It is further suggestive because there is a tendency among many psychiatrists to single out the paranoid type as being distinct from the catatonic and hebephrenic præcoxes.

From the sudden onset of three of the cases, one might reasonably question why they were not placed in the non-toxic group. Arbitrarily, even before the groups were correlated, these three were not included under that heading because they did not display, according to their clinical histories, any evidence of their ever being in that confused, muddled state generally noted during the course of a delirium. We think this worthy of note in view of the fact that all three of them finally developed a chronic psychosis.

Psychoneurotic Reaction Type.

Among our cases were three of psychoneurotic disorder. These patients had presented abnormal traits before, but had been able to live at home. Following childbirth, all had exacerbations which necessitated hospital care. One had an accentuation of her previous obsessive phobias and the other two developed conversion phe-

nomena. They were able to make a social adjustment after a few months.

Conclusions and Suggestions.

1. From our series of 72 cases, we found no psychosis peculiar to childbirth.

2. The various types occurring at this time appears to be essentially the same as psychoses occurring at other times.

3. In our series 32 per cent were deliria, 50 per cent manic-depressive psychoses, 14 per cent dementia præcox, 4 per cent psychoneuroses.

4. (a) Fifty-two per cent of the deliria were without discoverable toxic factors.

(b) The duration of the toxic cases was longer than expected.

(c) Seventy-five per cent of the manic-depressive psychoses were depressed; 17 per cent manic; 8 per cent circular.

(d) Among the depressions were a number with the element of confusion which was found to be more frequent in those with an accompanying physical factor. The prognosis did not seem to be altered.

(e) All the dementia præcox group were of paranoid reaction.

5. From our studies, it would seem that childbearing presents many problems of a physical and psychical nature which play a definite rôle in the production of psychoses. They do not of themselves, however, determine the type of reaction but merely act as exciting or precipitating agents in the onset of the illness.

In closing, we wish to express grateful acknowledgment due Dr. Russell for his kindness in permitting us to use the case records and for his generous and timely criticism of the manuscript.

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THE PSYCHIC RESEMBLANCES IN IDENTICAL TWINS.

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The occurrence of psychoses or other abnormal mental conditions in twins is a matter of great interest to the psychologist, who sees in them an opportunity for the comparative study of mental constitution and mental mechanisms. Twins have always been a source of interest and curiosity to mankind, but only recently have our knowledge and experimental technique advanced to the point where scientific investigation could be made of the nature of the twinning process. Nowhere do we come closer to the problems of heredity, variation and sex; for the biologist, twinning is a problem of the greatest importance. Bateson regards it as a fundamental manifestation of life, defining twinning as the "product of equivalent structures by division." Numerous studies have been made in this field, which are well summarized in Newman's "The Biology of Twins" and "The Physiology of Twinning." The psychologist has been slower to get to work upon the problems of psychic resemblance and psychogenesis presented by human twins. Most of the studies that have been made have been purely observational, which is perhaps all that could be expected, since twins of similar constitution are quite rare, and more rarely still do they come under the observation of the psychologist or psychiatrist. When they do the conditions for a thorough-going study are usually lacking. No truly genetic study of identical twins has as yet been made. Gesell rightly remarks that the results of such study of even one pair of twins would add incalculably to our knowledge of psycho-genesis and psychic development. However, when such subjects are not obtainable it is of interest and value to discover whatever we can of similarity or discrepancy between twins and to make diligent search for anything that may throw light upon their genesis.

In approaching our subject we must bear in mind the two classes of twins, those believed to be developed from two fertilized eggs

and known as fraternal twins, and those from a single fertilized egg, and known as identical or duplicate twins. The former may be of the same or opposite sexes, and no more alike than ordinary brothers and sisters; the latter are always of the same sex, and strikingly alike in form and feature, and in mental constitution as well.

Identical twins are believed to be derived from a single fertilized ovum. They are enclosed in a single chorion and furnished with a single placenta. As examination of the fœtal membranes at birth is seldom on record, we are obliged to rely upon other data to determine the identity or lack of it of a pair of twins. In anatomical structure and general physical features identical twins are usually remarkably alike. This fact had furnished material for the story-teller since his art first began, and there is perhaps no one who is not acquainted with one or more sets of twins so alike that it is difficult to tell them apart. Galton was the first to make a serious attempt to discover the degree of resemblance between twins, and in the paper entitled "The History of Twins, as a criterion of the relative power of nature and nurture," published about 1875, he declares the resemblance to be so great that it was necessary to study the minutiæ of physical development, which he found in the patterns of the friction-ridges of palms and soles. This study was actually carried out by Wilder, who developed an elaborate method of classifying the various types of patterns in palms and soles. He found the majority of cases studied to be "identical" in palm and sole patterns, the identity being in general pattern, for there is always lack of identity in detail. In one case he found almost complete mirror-imaging of the two palm patterns of the two individuals, and in several others symmetry reversal occurred in connection with the pattern of the index finger. Newman, after a careful study of the Texas armadillo, in which polyembryonic twinning occurs as a normal process, concludes that a lack of resemblances in such minutiæ or "any unit characters" cannot be applied "as a criterion in determining the monozygotic origin of twins." (The Biology of Twins, p. 174.) Since bilaterality in friction-ridge patterns often fails in a single individual, who is unquestionably of monozygotic origin, we should expect it to fail sometimes in the case of two individuals developed from a single egg. Newman argues that twinning is a fundamental proc-

ess, one almost universal in the field of biology, for wherever we have bilateral doubling we have twinning in some form. And just as asymmetry occurs in a given individual, so we may expect it to occur in twins, even though developed from a single egg. Newman concludes therefore that "a general summation of resemblances is more likely to be a sound basis than any single detail could be."

If, then, twins are strikingly alike in the soma we would expect them to be alike in the psyche, since the history of one is inextricably interwoven with that of the other. And indeed such seems to be the case. The mental constitution of identical twins is remarkably alike. If we disregard the stories which are not well authenticated we still have abundance of evidence upon this point. Several well-documented cases are on record of twins whose school achievement and later careers were strikingly alike. Dr. George R. Murray in the presidential address before the Manchester Medical Society, February 4, 1925, listed a number of such cases. Dr. Clement Lucas in a communication to Lancet of December 23, 1911, vouches for a pair of twins who entered the Royal College of Physicians and Surgeons on the same day, graduated on the same day, and whose school records as marked by 17 different teachers 66 times did not vary in a single particular except that once one was marked "excellent" and the other "very good indeed." In searching the literature I have found two cases of twins who were reared apart, being separated one pair at the age of eight months, the other, four years, who not only developed strikingly alike in form and feature, but whose abilities, tastes and preferences were almost identical (Jour. of Heredity, Vol. 13, 1922, p. 142-8). The writer has examined two sets of twins, children, who, although they had no opportunity to communicate with each other on the subject, yet gave in many instances identical responses to test questions, and whose rating did not differ more than two months. In "The Mental Growth of the Pre-School Child" Dr. Arnold Gesell reports a careful study of the developmental correspondence in twins.

The twins A and B have been followed for four years, from the age of seven. Twenty-five physical tests and measurements were made upon them when seven, which showed a remarkable similarity of development, even in the degree of ossification of the

carpal bones. At the age of 11 there is still the same correspondence. Gesell says, "The identity of these children has expressed itself in such structural details as teeth, skin-patterns, birth-moles, and cranial and carpal bones, and it is not unreasonable to suppose that there has been a basically similar developmental correspondence during the period when their nervous systems were undergoing fundamental organization" (p. 301). He reproduces a comparative psychograph of the performances of the two children in the Binet tests, at the age of eight; one-half of the psychograph is almost a mirror image of the other. A and B were children of superior intelligence.

The same method was applied in the study of X and Y; these children were paraplegics and mental defectives. Their general physical and psychological correspondence was also very great, amounting in many instances to practical identity. Both had a markedly spastic gait which made their motor carriage highly atypical and slow. In spite of the fact that their demeanor, posture and general motor control was so peculiar there was no great difference between the two children in this respect. "In fact," he concludes, "the motor correspondence is so great it is altogether probable that the genesis of their paraplegic condition dates back to a germinal or early embryonic origin."

It would seem, then, that in certain pairs of identical twins we have almost complete developmental duplication. Again, to quote Gesell (p. 317), "The germinal and somatic determinents of development may be so nicely balanced, during the time of conception and cleavage, that we may have two persons who psychologically as well as morphologically stand for but one individual to the pair." Indeed, Wilder considers that identical twins are a species, so to speak, of double monster, in which complete separation has taken place extremely early in fœtal life.

It often happens, apparently, that one twin is larger and stronger than the other, and may develop a little earlier. The relationship between the pair may even be that of leader and follower. There is a popular superstition that one twin absorbs the other's strength, so that he waxes strong at the expense of his twin who becomes a weakling. This has a foundation in fact in the so-called autosite or parasite cases, where owing to crowding or some other unfavorable developmental condition, one twin degenerates into a mere

parasite upon the other. Similar conditions may result in separate twins, identical or otherwise, one of whom is more favored than the other.

Though twinning in the sense of bilateral doubling is a normal process, it is the tendency of embryologists and medical men in general to regard the production of human twins as an abnormal process. Newman regards retarded development as the primary cause of twinning. And after the process is once begun it may be interfered with, as the human uterus is not adapted to the development of multiple fœtuses. Consequently, one is aborted very early in the course of its development, or may be absorbed into the body of the other. Dr. Alfred Gordon, in an address before the Philadelphia Psychiatric Society, in May of 1925, emphasizes the frequency of twinning in syphilis and other degenerative conditions, and concludes that in a certain group of cases at least "the fact of double conception is an inferior mode of procreation determined by the usual factors of degeneracy."

Dr. August Strauch in the Jour. of the A. M. A., Vol. 81, No. 26, p. 2181-2, reported a case of Mongolism in twin boys. Dr. Murray found 17 cases in the literature in which one twin was a Mongol and the other normal, and three cases, including Dr. Strauch's, in which both were Mongolians. The latter were in all three cases same-sexed.

A considerable number of cases of mental disease in twins have been reported. In no case, so far as I have been able to discover, has there been any essential difference in the nature of the disease where the twins were same-sexed. The onset and course are not necessarily identical, though cases are reported in which they are practically so. French and German observers have thought there was a specific "twin psychosis," to which they gave the name "La folie gemellaire" or "Zwellenschraften." In 1900 Soukhanoff reported 30 cases of psychoses in twins, and others have been reported from time to time. However, as these psychoses do not seem to differ from the deteriorating or affective psychoses in general, it would seem unnecessary to posit another type whose only distinction was its occurrence in twins. Psychoses in twins must also be distinguished from the "folie a deux" of the French, in which the exciting cause of a mental aberration in one case is supposed to be contact with a similar aberration in another. There is

no doubt that true psychoses of both the precox and manic type, as well as other forms of mental disease, occur in twins whose life experiences have been different, and who have had no association together while the disease was developing.

The case which follows has been under observation in Saint Elizabeths Hospital for the last nine months; that of twins, females, age now 43 years, whom we shall call Mary and Martha.

As often happens in adult cases, it was not possible to obtain a good history. The twins themselves were totally unreliable as a source of information, and the only accessible members of the family were a brother who had but recently re-established relations with his family after an absence of 20 years, and a sister who was herself on the verge of a nervous breakdown. Pieced together with information from a brother-in-law, and from an old gentleman who had known the siblings from childhood, the history is as follows:

The father's family were all high-strung, nervous people, of Dutch descent. A paternal cousin died in this hospital, mental diagnosis involutional melancholia. No other cases of actual breakdown were discovered in the father's family. The father himself lived to 88, though always "nervous." The mother's family were also temperamental and high-strung, but no cases of mental illness have been known in it. The mother is living at 78, still in good health. Two brothers suffer from rheumatism, a sister is very nervous, two other brothers left home in youth, and for 20 years the family knew nothing whatever of them. One brother returned rather recently, having anglicized his name (which was Dutch). The other is still missing.

The twins, Mary and Martha, were born in a small town in Virginia, forty-three years ago, the last of seven pregnancies. Mary was the elder, and a little larger, though there was little difference in their size or appearance at birth; Mary was bottle-fed, as the mother could not nurse them both. They developed practically together, and had measles and chicken-pox at the same time While they were five the family moved to Washington and they began school there. Though at first they had seemed healthy and normal, after they entered school the family began to realize that they were different from the other siblings. They did not learn so readily in school, and seemed to have difficulty in comprehension of events and situations. They had ungovernable tempers and very poor judgment. They were quarrelsome, and relations were always strained between them and other siblings, and they even quarreled with each other, though each was quick to resent any fancied slight to her twin from someone else. They always "planned and schemed" together and the family seem to have felt rather helpless in dealing with them, as they soon developed what seemed an utter disregard for the truth. They misinterpreted, misrepresented and

exaggerated, and when confronted with facts seemed incapable of recognizing them, but persisted in misrepresentation. From the sister's description, it would seem that they were incapable of distinguishing fantasy from reality, and the family declares this has characterized them since the pre-pubertal period. Puberty was uneventful, Mary maturing a few months earlier than Martha. Mary later, just when could not be discovered, developed dysmenorrhœa. Martha had no dysmenorrhœa but she suffered severely with "sick headaches" at her periods. No history of sex interests or experiences during childhood or early adolescence could be obtained.

They repeated grades in school and left at fifteen, having reached the sixth grade. No records of their school attainments are available, but the family considered Mary to get on a little better. After leaving school they were rather closely guarded at home, though they were allowed parties and boy friends. They were popular with young people and made a fairly normal social adjustment, and each married, Mary at 19 and Martha two years later. So far as the family could judge, each adapted fairly well at first. Mary's first child was born in five years after marriage, while she was 24. Martha's was born nine years after marriage, while she was 30. After the birth of their children each began to have marital difficulties. Mary took a gentleman boarder and fell in love with him; she began to tell tales of her husband's cruelty, and, finally, went to Reno, obtained a divorce and married the other man. There was one child of this marriage, born dead. Her husband divorced her after a year, and she later remarried her first husband, and had three more children. The husband died six or seven years later, since which time she and the children have been cared for by relatives.

Martha's husband drank and after the birth of her baby she complained a great deal of him. Though the twins were never together after their marriage, except for short intervals, it was to each other that they turned in any crisis, each taking advice from the other and ignoring other relatives. Martha had helped Mary in her marital difficulties, and upon Mary's remarriage and return to Washington she took a hand in Martha's troubles, and advised her to leave her husband. However, he left her, and she obtained a divorce and the custody of the child, and alimony. She, too, has been supported by relatives ever since.

No clear information can be obtained as to the onset of the psychoses. The family thinks that Mary's peculiarities became more pronounced a little earlier than Martha's. However, in each it has been a gradual development, their natural tendencies becoming more and more accentuated as they grew older. Neither of them ever showed any ability at work, yet each tried their hand at various jobs, only to find themselves unable to keep them. Martha was the better worker of the two, Mary was inclined to lie about and complain of feeling badly. Each of them was always complaining of how hard they had to work and of ill-treatment at the hands of the family. Martha was violent for a time, threw a hatchet at her son and threatened her sister. She was also more profane than her twin. Having been tried every place

in the family and failed to adjust, they were brought to the hospital, Martha being entered a few days before Mary, on February 17, 1925.

Complete physical examination of the pair resulted as follows:

Well developed and nourished, strikingly similar in appearance, Mary's hair a trifle finer than Martha's, a little lighter, both brown. Skin clear. Numerous moles, Mary having more than Martha. Each had an unpigmented mole on the inner canthus of the right eye, and one on the right arm just above the elbow. Mary had a large pigmented mole on the left jaw about four centimeters below the ear, Martha had two smaller ones in almost the same situation. The crown of Mary's hair turned left, of Martha's right. Mary was five feet one and a half inches tall; Martha five feet one and a quarter inches. Mary's weight, 115 pounds; Martha's 106. Mary's sitting height, 32¼ inches; Martha's 32. Arm length of each 35 inches. Chest girth, Mary, 36 inches; Martha, 35. Occipito-frontal head diameter, Mary, 18.4 c.; Martha, 18.8. Temporal diameter, Mary, 11.8 c.; Martha, 12.1. Index of stature, Mary, 52.27; Martha, 52.22. Heart rate of each 72. Blood pressure, Mary, 100/78; of Martha, 100/70. Martha gave a history of appendectomy in 1918, removal of ovary in 1919, second in 1920. Mary of a dilatation and curettage at the age of 23; catamenia irregular for several months previous to hospitalization. Summary in Mary's case:

A woman of 43 years, in bed, languid and complaining of everything suggested; appears pale, is very nervous when touched, says past few months catamenia occurs every two weeks, complains of constant backache, lumbar and sacral regions; systems not grossly defective; several teeth bad; blood pressure 100/78 R. Reflexes normally present and very active.

Summary of Martha's case: A woman of 43, height 5 feet 1¼ inches, weight 106 pounds; cooperative; slight pharyngitis; suggestion of dullness over upper right lobe. Blood pressure 100/70. Evidence of hysterectomy. Reflexes normally present and very active.

X-rays of the entire skeleton were made. There were no abnormalities or displacements except of the teeth. Mary's teeth had received better care than Martha's, but in each an impacted unerupted left upper cuspid was present. Reports on the condition of the sella turcicas read as follows:

Mary: Sella turcica is rather small and is nearly closed.

Martha: The sella turcica is quite deformed, the floor being eroded in the posterior aspect and the posterior clinoids seem also involved in these processes.

Laboratory reports: blood agglutination group II, Wassermann negative. Basal metabolism, Mary −19.4, Martha −9.7. Special examinations, eyes, normal in both cases, vision −20/20; Mary had a refractive error. Ears, Mary had a chronic suppurating otitis media; Martha, examination negative. Nose, in Martha the septum was deviated slightly to the left. The twin attributed the fact to a fall in which her nose was injured. Mary, examination negative. Throat, in each case was negative.

Thus will be seen the remarkable physical similarity of the twins in all essential features.

Finger and palm prints were taken, and were read by an expert in the Bureau of Identification. His report is as follows:

Palms:

Left hands of each have almost identical pattern of ridges.

Right hands differ considerably.

Fingers:

Mary:

Right hand:

Radio loop in right index finger.
Wing loop in right middle finger.
Whirl loop in right ring finger.
Whirl loop in right little finger.

Left hand:

Radio loops in all fingers.

Martha:

Right hand:

Similar to Mary's left hand fingers (radio loops in all).

Left hand:

Lines of left hand fingers resemble those in her (Martha's) right palm.

On any theory of behavioristic psychology one should expect to find the twins alike in mental constitution; and we were not disappointed. When admitted to the hospital each was pleasant and cooperative, tucking her head to one side with an ingratiating smile when conversed with. Each complained chiefly of feeling tired because she had worked so hard. It must be remembered that they had not been together at all recently, one living in New Jersey and the other in Virginia, with relatives. Each used a fairly good vocabulary, and showed a fondness for long words and florid expressions. The emotional status of each was uniformly cheerful and affable, and each was accessible so far as she understood what was wanted of her. Each denied hallucinations; Mary admitted that people had not "treated her just right," and Martha said "at home they were just a little odd, peculiar." However, each had a history of persecutory delusions. Martha had a history, rather indefinite, of having used alcohol to excess for a few years, though not recently. Mary admitted to having been on "hop's malt" several times when she was "weak." Each described her sex life with her husband as rather strenuous, saying they were very modest by nature, and their mother had made them more so; claimed they had never seen each other nude, and Martha after marriage always undressed behind a screen. She accused her hus-

band of perversions, while Mary, whose husband was dead, deified him as a super man. Each described the other as the prettier, brighter, and more popular, though Mary admitted that she had better grades in school. Orientation was approximately correct, though each described the hospital in flowery terms, evading the fact that it was a hospital for mental disorders. Memory was unreliable. Each gave a history of high school and business school, whereas, the family was unanimous in declaring they only reached the sixth grade. Each told a long story of her troubles, of being obliged to work until ill to support her children, and of lack of sympathy and understanding on the part of her family. On the whole each made a fairly good impression until put upon standardized intelligence tests, when their abilities were shown to be mostly verbal. Each used a fairly good vocabulary, but when pinned down to definitions and exact use of words did very poorly indeed. Neither would admit for a moment that she did not understand a situation; Martha covered her ignorance with a pall of words, but Mary was a little freer to ask questions, and if given time could sometimes clarify a situation by talking about it. Each had the same basal year, six (the test was the Stanford-Binet), missed the same test in year seven, and two tests in year eight, though not the same ones; each missed the sentences in year nine, the absurdities, reading and report and the free associations in year ten, but Mary scored in the vocabulary tests and Martha missed them. In year 12 each had credits for interpretation of pictures and in year 14 each could repeat seven digits, but Mary could accomplish the logical reasoning test, which Martha failed. Mary scored nine years and five months, as compared with eight years and eleven months for Martha.

For awhile after admission Mary lay about on sofas and begged to remain in bed, scarcely speaking above a whisper because she was so weak. No physical basis for her complaints could be discovered. Though the twins were kept in separate wards they heard more or less of each other through other patients and Martha was much disturbed by Mary's supposed illness, taking the attitude that she had been brought to the hospital because Mary was there, ignoring the fact that she entered first. Later Mary improved, and Martha wrote her family that she had pulled Mary up and exhausted her strength in doing so. She became almost as hypochondriacal as Mary, while the latter began to worry about her and write the

family to remind them of how much she had always done for Martha, that her resources were now nearly at an end. Both twins wore heavy sweaters and complained of being cold far into the summer, sitting on porches in the broiling sun and declaring sun baths were necessary to their health. As the months went on, though still complaining of being overworked and worried sick about her children, Mary put on flesh and became quite comfortable. No hallucinations could ever be discovered. Martha, on the other hand, developed the idea that men visited her room at night, and disturbed the other patients by her remarks to them. She never would admit to the doctors that she heard voices, but nurses and patients were convinced that she did. She began to believe that her brother visited the hospital at various times and was not allowed to see her. Mary believed for a long time that her brother was a patient in the institution, but this was not necessarily a delusion as he had told her he was going to stay awhile when he brought her. Martha grew quite worried and excited over her fancied wrongs and one day when on a walk attempted to get out of the gate. Mary hearing of this began to talk of "pulling her out of this state," exactly as Martha had talked during Mary's supposed illness.

The diagnosis made upon the twins was dementia precox, originally of sub-average intelligence. In their childhood, given our present knowledge, they would probably have been diagnosed psychopathic personalities. The history of poor judgment, pathological lying, and inability to adjust to their family, are as much psychopathic as precox characteristics. However, as described by the family, the lying appeared to be of the phantasy type, rather than the clever falsifications of the psychopath.

During their hospital residence it has proved practically impossible to apply any type of mental analysis to them. They chatter away, repeating the tales of a "wonderful father and mother," "a beautiful family life" in childhood, of dreadful hardships and privations since the loss of their husbands, of the efforts they are making to be "brave" and "bear up under their burdens." They will talk by the hour of trivial childhood experiences, responding blandly to any questions, but missing the point entirely as soon as we begin to get below the surface. They are shallow, poorly integrated personalities, whose intellectual abilities were never of high order and whose emotional development never progressed beyond a childish level.

We can only guess at the ontogenesis of their personalities. They were cared for by the mother, and each admits having been terribly jealous of the mother's ministrations to the other, though whether this is a fact or phantasy we do not know. No record of the first two years of their life could be obtained, so we do not know how they reacted to the training of the nursery. Certainly, according to all reports, both of them have been stubborn and wilfull since infancy. Neither of them has ever appreciated the value of money.

In spite of Martha's willingness to work, neither of them could ever keep her house in order, though as young girls they were fairly neat about their persons. Each of them claims to have been extravagantly attached to the parents, naming now one and now the other as her favorite. However, to the family they appeared more attached to each other than to anyone else. Though they actually were inferior in intelligence to the other siblings, they seem to have effectually compensated very early, through the over-development of the phantasy life. In spite of their poor adjustment to life they are unconscious of any lack within themselves and take the air of martyrs with whom fate has dealt harshly.

We have here, then, twins of remarkable morphological and general physical similarity who, in spite of the fact they are now 43 years of age and since their majority have lived apart, accumulating different life experiences, still show remarkable similarity in their mental reactions. Each is hypochondriacal and mildly delusional. Each has practically the same mental equipment as measured by standardized tests. Martha, who has undergone an artificial menopause, is showing some of the anxiety features of the involutional period and her delusions have a sexual coloring which Mary's lack. It will be interesting to note Mary's reactions in this particular when she too undergoes the physiological changes of the climacterium.

The mechanism of their psychoses is largely compensatory, of the simple wish-fulfilling type we find in persons of no great psychic energy. One is tempted to ask if their present state, barring Martha's hallucinations, is much different from what it has been for many years; in other words, if the psychosis in each did not arise very early, long before the end of the developmental period. There are certainly cases in which the precox process seems not so much a regression as a failure to develop out of the narcissistic

or homosexual period. These cases may be diagnosed psychopathic personalities for years before the true nature of the process shows itself.

The very interesting question arises as to why two individuals, even granting pre-natal development under identical conditions, should continue to show such very similar physical and mental characteristics even in the fifth decade of life. We know that their life experiences began to differ almost immediately after birth for Mary was a bottle-baby and Martha was breast-fed. This in itself would theoretically make for a profound difference in psychological attitude. How their other childhood experiences differed we do not know, but we do know that no two children, even twins, are ever subjected to exactly the same environment. Perhaps identical twins have an advantage over other children, in that the family and friends, finding them so nearly alike, tend to use the identification mechanism and react towards each more consistently than is usual with different brothers and sisters. Identical twins are apt to be spoken of as a unit and treated as such. "The twins—they" is the usual family formula. And so nature may be reinforced by nurture during the formative years. A striking instance of the disparity in maternal attitude towards twins who were not identical may be interpolated here. I cite the case through the courtesy of Dr. L. B. T. Johnson, to whom a mother brought a pair of twin boys, age five, one of whom was fast becoming a behavior problem, while the other remained a good little boy, and "no trouble to mother." She was sure that, since they were twins, they were being treated exactly alike. Analysis of the situation, however, revealed an unconscious hatred of the bad twin on the part of the mother, she having identified him with the father, whom he resembled and with whom her relations were strained. We can well imagine how her unconscious attitude must have colored her relations with the boy.

However, where twins are brought up apart and still show remarkable similarity of physical and mental constitution, we are obliged to fall back upon the theory of original nature. Nor is there anything surprising about this. Human beings are infinitely more alike than they are different, and each one of us can be trusted to react in fairly similar fashion to similar stimuli.

To quote White, we have "a heritage of 500,000 years as humans alone, to say nothing of the millions of years back of that

during which the simplest monocellular structures were evolving into and through the Metazoa to their present-day goal in man. It must be true, therefore, and a little reflection will serve to convince us that it is, that the various individuals of the human species—*homo sapiens*—are vastly more alike than different, that they have, literally, thousands of points of resemblance to one difference. It must also be perfectly plain that such points of dissimilarity as exist must have reference, in the main, only to that relatively infinitesimal part of us which belongs to us individually, which is the product of our individual rather than our racial development."

Identical twins, then, being much more nearly alike than any other two individuals, we should expect the psychological structures evolved by the highly similar nervous systems to be more alike than in the case of ordinary brothers and sisters.

However, we are just at the beginning of our problem. It remains for some psychologist to do for genetics what Bateson and Newman have done for the biology of twinning.

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Notes and Comment.

EXPERTS AND EXPERT TESTIMONY.—At the last meeting of The American Psychiatric Association, held in New York in June of this year, an extensive report was presented upon "The Legal Aspects of Psychiatry."

This report will be published in full in the next number of this JOURNAL, together with the discussion which it provoked.

It is not our purpose at this time to comment upon the report, beyond saying that it is a most painstaking review of the topics which it discusses, and deserves most careful consideration.

Among other subjects discussed, expert testimony receives due attention, but, in view of the whole subject, The Legal Aspects of Psychiatry, assigned to the committee, it looked upon the question of experts and expert testimony as a "relatively minor" one.

If newspaper reports are to be accepted as correct, this is not the view taken by The American Bar Association.

At its annual meeting in Denver, Colo., in July of this year, this Association is said to have very seriously considered charges made by members of its own body that the courts no longer hold the confidence of the people.

Various committees reported upon different phases of law administration and judicial procedure, and numerous recommendations were made.

From a newspaper report we learn that "chief in importance in these reports were those of the committees on jurisprudence and on judicial procedure, which denounced 'the growing prevalency of the use of expert witnesses with their contradictory testimony,' which is giving rise to the belief 'that such testimony is purchasable.' The report contained recommendations providing for the employment of expert witnesses only at court order, salaries (fees?) to be fixed and paid by the state, and to permit the trial judge to comment on the value and weight of such testimony in instructing the jury."

Our readers should bear in mind that expert witnesses in courts are not always medical men. Many questions come up in trials which demand, or appear to demand, the testimony of men expert in chemistry, mechanics, engineering, architecture, and other departments of human activity.

We may therefore take it for granted that the animadversions of The American Bar Association apply to all kinds of expert testimony.

The charge that expert testimony is " purchasable " is a serious one, but this is not by any means the first time it has been made.

Who is at fault? Is the man who offers the bribe any less guilty than he who is bribed?

In a well known case, several years ago, a medical man of our acquaintance was approached and his services solicited as an expert. He declined, but was told, " You may charge any fee you wish." " That," he replied, " is an excellent reason for again declining. I may sometimes be called in a case when I can conscientiously give my opinion. I do not wish to be met in cross examination by the query: ' Did you not testify in the ——— case, when any fee they demanded was paid the witnesses? ' "

Here was an instance in which the attorney took it for granted that the promise of a big fee would secure the desired witness. He never took the trouble to ask if he had any opinion on the case, nor did he suggest that he would like him to examine his client, and then consider the question of going upon the stand if the result of his examination sustained the contention of the defense.

It is not alone the man tempted by the offer of a big fee to try to make the worse appear the better part who disgraces his profession, impedes justice and throws suspicion upon all judicial methods and all expert testimony, but the man who wishes to be advertised as an expert, who in most instances possesses few, if any, qualifications which justify his tetimony.

We have heard such men on the stand, we have known such men who tried to use influence of one kind or another to be called in a case, and invariably their testimony has been of a type which showed them to be both corrupt and ignorant. We believe, however, that such cases are rare, and know that they meet with general professional condemnation.

Thus far we are at one with the Committee of the Bar Association. We are also in hearty accord with the implication that experts are too often called, that in many cases their services are unnecessary and often a stumbling block in the way of justice and equity.

We do not, and here we speak subject to correction, see that calling experts only on court order will wholly correct the evils inherent in present conditions. We have the impression that a criminal is entitled under the Constitution to call any witness on his behalf he desires to have heard. If then he, or his attorney acting for him, is dissatisfied with the experts assigned by the court, may he not under this right summon those of his own choice?

What would happen in a trial if the judge were to comment in the presence of the jury upon the value and weight of the testimony of any witness?

Judges have, in the past, and not infrequently with good reason, commented adversely upon expert testimony. There have also been comments made from the bench which showed that the prejudice or bias said by the court to exist in the mind of the expert was equally exhibited by the judge, but we recall no instruction to a jury as to the value and weight of any individual testimony.

If an expert is needed at all by either side in a judicial inquiry, he is there as *amicus curiæ*. It would appear strange and out of order for the court to "comment on the value and weight of his testimony."

Juries are as a rule, we believe, able to make a reasonably correct estimate of the value and weight of the testimony of a medical witness.

In more than one instance we have heard juries bring in a verdict of "not guilty," ignoring completely the testimony of medical witnesses who supported the plea of the defense—insanity.

These juries were moved by their emotions and while paying no attention to the plea of mental irresponsibility, they paid equally scant attention to the testimony of witnesses to the crimes alleged and the contention of the experts for the prosecution of complete responsibility.

That the Bar Association suggests that experts be called only on court order is an evidence that it recognizes that the cause for

at least a portion of the very unsatisfactory conditions now prevailing in this regard lies within its own ranks.

It is very evident that an attorney having a weak cause to plead will naturally seek the kind of expert who would lend his services to its support.

The courts now possess, we believe, in some states at least, the power of calling experts which the Bar Association asks be given them.

It is nearly half a century since we, as a spectator, attended a trial for damages, in which contrary testimony was given by medical witnesses as to the condition of a man's leg after an alleged injury.

The trial judge upon his own initiative issued subpœnas for three well-known physicians in the community, one of whom was a surgeon of large experience, directing that they come to court, take the plaintiff into a side room, examine him, and report on the witness stand the condition of his leg.

The verdict was rendered in accord with their findings.

It is a matter for congratulation that as representative and influential an organization as the Bar Association recognizes the necessity for reform, and we trust, simplification, in judicial procedures and in expert testimony.

It is to be expected, we feel confident, that out of the deliberations of the two national organizations, one representing law and the other psychiatry, something will result which will restore the confidence in judicial procedures said, with truth we regret, to be failing, and place psychiatry in the place which rightfully belongs to it in the interpretation and administration of law.

It is not to be presumed that the ideal will be reached at once. We doubt if that happy result is ever to be attained.

There must be concessions and compromises, but never a concession to injustice, nor a compromise with truth.

ERRATUM.—We very much regret that in the review of Professor Gates's Elementary Psychology, in the April issue of this JOURNAL, the reviewer inadvertently credited the book to the C. V. Mosby Co., of St. Louis. This firm at once called our attention to the error.

The work, as we presume is generally known, is published by The Macmillan Co., of New York, to whom our apologies are due.

DIRECTORY OF CHILD RESEARCH WORK.—The Committee on Child Development of the National Research Council is preparing a directory of research in child development. The directory aims to secure coordination of research and cooperation among workers by facilitating interchange of material, reprints, and methods, and the organization of conferences on various phases of child research. Readers of this JOURNAL who are engaged in research on developmental problems, particularly as they concern the child under seven years, are requested to communicate with Dr. Leslie R. Marston, Executive Secretary, Committee on Child Development, National Research Council, Washington, D. C. The directory will be mailed to those furnishing requested information.

NEW TITLE AND CHARTER FOR THE MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—In September last, King George the Fifth granted to the Medico-Psychological Association the right to use the prefix "Royal," and commanded that the Association should thenceforth be known as The Royal Medico-Psychological Association.

This Association was formed in 1841, but has never had a charter. Upon petition to the King, a charter was granted The Royal Medico-Psychological Association by His Majesty under date of March 13, 1926.

It may be of interest to the members of The American Psychiatric Association in view of the proposed changes in its Constitution to know the objects and purposes of the Association in Great Britain. These are in brief, as stated in the charter:

a. To hold meetings.
b. To publish a Journal.
c. To distribute books and treatises.
d. To make expenditures for the investigation of mental diseases.
e. To improve the administration and laws relating to mental diseases.
f. To provide lectures, classes, examinations, scholarships, prizes and certificates to promote the study of mental diseases.
g. To establish branches or local divisions of the Association.
h. To provide legal assistance to the members of the Association.

The provision for officers and a council and the duties of the council are much the same as they are in the American Association.

DEATH OF SIR FREDERICK MOTT.—During the recent session of The American Psychiatric Association in New York, in June, word came of the sudden death of Sir Frederick Mott, K. B. E., F. R. S., President of The Royal Medico-Psychological Association.

A cablegram of condolence was forwarded to Dr. Mott's family and associates in Great Britain.

We shall publish in a later issue a sketch of Dr. Mott's career.

Book Reviews.

Outline of Abnormal Psychology. By WILLIAM MCDOUGALL, Professor of Psychology in Harvard College. (*New York: Charles Scribner's Sons, 1926.*)

Footnotes in his "Outline of Psychology" (New York, Scribner's, 1923), informed us that Professor McDougall was producing a second volume which would pertain to abnormal mental conditions. Some of us who appreciate his great contributions in the field of experimental psychology trembled for him. As the years passed it seemed he had perhaps encountered difficulties which gave him pause and that therefore the dangers of his flinging himself into the troubled waters of psychiatry were being reduced by his study of their currents.

The present volume is a book of some 556 pages, an appendix (The Definition of the Sexual Instinct), and a satisfactory index. In its preface, perhaps to conform to the vogue, the professor remarks that he regards "this volume as an early, if not a first, attempt to bring into something like systematic order a very large and difficult province of science, hitherto cultivated in patches rather than as a whole." In qualifying for the task he points out his war experience at Netley, where he undoubtedly did excellent work with psychoneurotics. In addition to this he relates that he has been almost always in touch with at least a small number of mental patients for years past.

In spite of these explanations one is struck by a difference of viewpoint, and even of terminology, in the case of this book as compared with the "Outline of Psychology." For example, he accepts "affect" as a valuable word in the abnormal field, thereby joining himself with at least one continental writer who revels in contemplating "The Drive of the Affects." Some readers will be surprised to discover that Dr. McDougall has "enjoyed the great advantage of . . . . [having his] dreams analyzed by Dr. C. G. Jung." It is not quite evident whether this analysis of dreams also included an analysis of personality; certain rather characteristic traits of the author, reflected in his pages, suggest that such was not the case. An especially good example of this latter is to be found toward the end of his consideration of the various schools of abnormal psychology, in which he tabulates certain distinguished members of "The Psychological School." Dr. Morton Prince is the best representative in America, and the late W. H. R. Rivers, in England. Fifteen other members in good standing are given. After listing some of the best men in modern psychopathology, and two or three whose qualifications are perhaps personal to Dr. McDougall, he writes, "I think I may add Professor Adolph [*sic*] Meyer, together with those psy-

chologists who stand nearest to him." (Perhaps the reviewer's *carte blanche?*)

There are chapters on the nature of functional disorders. many of the statements of which are most gratifying; a consideration of fatigue, drugs and sleep which is poorest in regard to sleep, and a chapter on hypnosis. The book seems to be marred, rather than benefited, by a considerable admixture of neurological speculations; *e. g.*, "In dreaming, the instinctive dispositions are at work and energy circulates in the cerebrum; but the quantity of energy so liberated during sleep is less than in waking life; all activity proceeds on a lower plane of activity, and the dream-activity involves only relatively restricted tracts of the brain; hence the efferent outflow also is relatively feeble, insufficient to overcome the raised resistance of the synapses leading to the pyramidal tract and other efferent channels." The discussion of hypnotism is quite good. The succeeding chapter on the Theory of Hypnosis and Suggestion has much neurological speculation, which has its upshot more or less as follows: "Normal sleep implies, then, a state of relative dissociation of the brain, and many points of similarity . . . . indicate that hypnosis also involves relative dissociation of the brain. . . . . The weakening or abolition of reflexes, which, I believe, occurs only in very deep stages of hypnosis, may be regarded as due to the dissociation having attained so great a degree as to affect the functional continuity of the neurones composing the lower reflex arcs." There is a theory of "rapport" which fortunately is psychological and reasonable. His discussions of suggestibility hang to some extent upon his doctrine of "the submissive tendency." He criticizes the theories of suggestion elaborated by Janet and Freud. In this connection we are delighted to discover a recommendation of Moore's "Dynamic Psychology." Much criticism is aimed at the exaggerated and fantastic which have not yet been eschewed in the evolving psychoanalytic doctrines. McDougall is unstinting in his expressions of appreciation of the importance of Freud in the evolution of psychology. While one could scarcely say that his critical treatment of psychoanalytic doctrines in the "Outline of Psychology" is a model of fairness and dispassionate exposition, the very abundant comment of that general description to be found in the work under review is more measured and scientific. The gist of the personal situation existing is to be found in McDougall's feeling that Freud is one of the first *dynamic* psychologists; but that McDougall himself brought out a psychology of that type in his "Introduction to Social Psychology . . . . written in the year 1907 at a time when I had only a very slight acquaintance with Freud's work" (and none, of course, with that of American pioneers).

There is a discussion of dreaming, including some examples which the author experienced with Jung, and a "Partial Theory of Dreaming." This precedes chapters on the Dream Theories of Freud and Jung. There is much that is excellent in these. The reviewer sympathizes in particular with the author's remark that Freud would have been saved from error by greater use of the comparative method; *e. g.*, "The impulse of curiosity

is regarded as a 'component' of the sexual instincts of children, because many children display curiosity concerning sex and the mysteries of birth. They also display curiosity about many other things, about whatever is only briefly perceived or apprehended. And by animals curiosity is displayed in an entire independence of the sex impulse. . . . . In similar fashion, disgust, which is so obviously connected primarily with the taking of food, ... is made by the Freudians one of the multitudinous components of the sex instinct. Ferenczi . . . . assumes that coprophilia and necrophilia are normal components of the sex instinct. . . . . The annexation of the acquisitive impulse to the sex instinct involves a still more remarkable display of perverted ingenuity. One of the many strange and insubstantial Freudian assumptions is that every child likes to play with his fæces and urine, and that he derives sexual pleasure from retaining his fæces when he should extrude them; and he is supposed to treasure his fæces as a most valuable possession. . . . ." McDougall emphasizes the vitiating influence of the doctrine of "ideas" which is one of the silent postulates of Freud. He suggests, in a footnote, that "One source of obscurity and confusion in Freud's expositions is the neglect of the important distinction between potential or latent energy . . . . and free active energy. . . . ." The reviewer again sympathizes with his criticism of the use of the word "mechanism": no matter how clearly one attempts to avoid its lay implications, this term leads to an atomistic mechanical consideration in psychology. The criticism of the Freudian doctrine of dream symbols includes several good points, although the usage by Dr. McDougall of "Symbol" is not beyond objection; *e. g.*, "Symbolism, or symbolization, plays a great part in our lives and in the determination of neurotic symptoms. . . . . A similar tendency to symbolic repetition plays a part in the shaping of the symptoms of mental disorder. . . . . The subject commonly fails to recognize the significance of the symbol; thereby showing that it is the product . . . . of subconscious mental activity. . . . . The border line between a ritual act and a symptom. . . . . The symbolic expression of the moral situation in bizarre symptoms . . . . Some cases of stuttering fall into this group of symbolic or near-symbolic symptoms. . . . . Neurotic dizziness may be a symbolic symptom." The reviewer hopes that some day the alleged distinctions drawn in the realm of the *symbolic or mental* will be thought about rather than taken for granted; thereby, McDougall's process of "reification" will be reduced in its widespread utilization. In the criticism of the Jung theory, the author expresses doubt as to the reality of the archetypes and includes a comment on the dubious justification for rejecting Lamarckism.

Chapter X, "Day-dreaming," is not satisfactory. A number of the popular misconceptions are repeated in McDougall's impressive style, and Bleuler's "Autistic Thinking" is given a degree of prominence which is not consistent with the general usage throughout this book. Elsewhere Dr. McDougall writes, "It is the recognition of autistic thinking that has transformed psychiatry, rendering it a progressive science and a useful art."

In this connection one cannot but think of the work of Elton Mayo, whose conclusions on the subject are really illuminating. His notion that dealing in revery with any novel content must precede "logical" thinking about it, is very much more important in its implications than is the contemplation under review; *e. g.*, "The more our train of thinking is dominated by motives, by desires and impulses, whose nature and goal remain obscure to us, the more does such thinking approximate to the type of autistic thinking." A solemn warning as to the danger of day-dreaming is appended, and one is somewhat entertained to read of "the *infamous*[1] Chicago murder *trial* of 1924."

Chapter XI is Conflict, Repression, and The Complex; a neural scheme of the complex is given. Chapter XII deals with dissociation and includes eight case reports. The book includes brief summaries of over 60 cases, a considerable number of these having been quoted from other authors. The reviewer has not found many of these to be other than superficial. The next chapter deals with automatisms. In it he advances Prince's doctrine of "co-conscious activity." The argument in behalf of this doctrine is rather feeble. The next chapter is concerned with Vague Fears and Anxieties. Among its cases one, case 16 and its explanation, does not do great credit to the author. In Chapter XV one reads "The relation of the symptoms to the patient's irregular and shameful practices is, in general, obvious." The discussion of Regression, which makes up Chapter XVI, is not thoroughgoing: "I suggest that the term should be restricted to those instances only in which the morbid nature of the process is revealed by the fact that, when circumstances call for the higher modes of functioning, the patient is unable to respond with those higher modes, and in which there is not only inability so to respond but also some actual return to childish or infantile modes of functioning which are no longer accessible to the volition of the normal adult." Chapter XVII, "Tics and Stereotyped Movements," emphasizes the psychogenic factors but does not include convincing argument for this correct interpretation. The chapter on Compulsions and Obsessions quotes from Dr. Rivers and discusses Prince's four-type classification of obsessions. "Displacement of Affect" is interpreted by McDougall as "symbolic extension of the obsession." The chapter includes a discussion of the terms, anxiety and fear; the "Pansexual Etiology of Fear" is rejected by the author, but he admits that sex situations are not uncommon in the etiology of morbid states of this sort. Our author impugns the notion of Drever and MacCurdy to the effect that fear only arises when the expressions of the instinct of escape are obstructed.

There is some justification for dividing the book at this point, referring to the foregoing as the General Psychopathology and the succeeding 197 pages as Special Psychiatry. The first of this, Chapter XIX, entitled "Perversions of the Sex Impulse," is not without merit, but is far from exhaustive and definitely inaccurate. While the author appreciates the theoretic

[1] All italics herein are reviewer's.

and great practical importance of perversions, and supplies an intelligent basic classification, his treatment of homosexuality is particularly imperfect. "Extension of the sexual impulse to an abnormal object . . . . in a simple associative manner. . . . . Many cases of homosexuality, especially those of a mild and transient nature, must I think be regarded as of similar genesis. . . . . The weight of authority favors the view that, in some small proportion of human beings, the sex instinct is innately inverted, is innately homosexual, that in some men it has the special organization which it normally has in women; and conversely in some women. . . . . It is doubtful whether such cases are susceptible to treatment or cure. One such case . . . . proved utterly resistant to my efforts. . . . . Those homosexuals in whom the perversion [*sic*] seems to be innate seem little liable to persecutory delusions. They boldly assert their right to do as their nature dictates to them; they cannot be made to admit or to feel that there is in such practices anything unnatural or repulsive. They have no sense of guilt or self-reproach; . . . . I have argued with such cases at length without obtaining the least sign of yielding from this position. [To those personally acquainted with Dr. McDougall the convincing force to him of such an experience requires no emphasis.] . . . . This view does not imply the necessity of postulating two distinct sides, or aspects, or impulses, as 'components' of the sex instinct as is commonly assumed by psychoanalysts. We have to remember that, in the human species, the bodily differentiation between the two sexes is slight; that, especially, the immature youth presents many physical resemblances to the female. Bearing this fact in mind we can see nothing mysterious, or requiring special and involved explanations, in the fact that in every society in which custom permits of very free intercourse of the sexes, inverted sexual practices commonly flourish among the men. The fact is sufficiently explained by the common tendency of men who indulge freely in more or less indiscriminate sex relations to seek ever new sources and modes of gratification, among which the seduction of youths not unnaturally occurs." The author then discusses neurotic perversions ". . . . cases of perversion which in various degrees have the character of neurosis." In this discussion McDougall takes another fling at the Œdipus Complex—the anthropological implication of which seems to have escaped him, perhaps from his antagonism toward the orthodox Freudian discussion of it. It is rather discouraging when an experimental psychologist of great note is lazy enough to content himself with ponderously repeating threadbare discussions on so important a topic as is parafunction of the sexual impulses. His appendix, which reprints one of his productions of 1914, shows that at that time he appreciated the problem and was doing some fairly constructive thinking along the line, even though one of his notions took the rather entertaining form of the following: "The perfectly innocent boy (ignorant of all facts of sex) and who has never experienced excitation through or in the sex organs, feels the mysterious and powerful attraction and the emotional significance of the female form. . . . . In general . . . . sexual inversion and perversion would necessarily be far commoner than they are if

Freud's notion was true. . . . . The absence of bashfulness ['Essentially a struggle between the two opposed tendencies of self-display and self-abasement, each being a primary instinctive tendency'] in relation to the opposite sex is then, I submit, strong evidence of the absence of the stirrings of sex in the normal child."

Chapter XX deals with Delusions and discusses paranoia. The author correctly concludes: "It is probably only when the subject is aware of some shameful weakness, or of some guilty action in his own past, and when he represses in some degree this knowledge and its affective tendencies, that such delusions become so fixed as to fall into the distinctly morbid class." But thereafter he quotes Bleuler's views and speculations, that "fearful delusions, such as tormenting by devils, appear to be extreme forms of the delusion of persecution; the fear being provoked secondarily by the fancied persecutions. And the delusions of jealousy, another common form, are to be traced to this same root, a resentment at a real or fancied injury to the self. . . . ." In the same treatment he speaks of a delusional system becoming "a stable, relatively isolated, part of the mental structure"; it seems as if McDougall were open to the criticism which he frequently aims at others in this usage of mental structure. While he intends to convey what appears to be a safe conception of the permanent experiential contributions to mind, his terminology is almost as perniciously static as is that of the Mosaic Psychologist whom he criticizes. He goes on to take up critical consideration of Freud's theory of paranoia, and does badly. This whole consideration is vitiated by the artificial disjuncture of paranoia—a rare condition—from paranoid states. Results of this procedure take the shape of "If it were true that the delusion of persecution is always first formed in relation to some person of the same sex, Freud's hypothesis would be in a stronger position. But such is by no means the case. . . . . If a man is aware of homosexual inclinations, and still more if he has yielded to them, how much more heavily must he be burdened. . . . . We may perhaps see in these considerations the explanation of the fact that Paranoia occurs in men much more frequently than in women."

Chapter XXI deals with Hallucinations; "persistent hallucination is one of the most common symptoms of mental disorder." Prince's theory is given. The illustration by analogy of mirror-images is feeble. In general the theory is a good start toward an understanding of these phenomena.

There is nothing particularly new in the succeeding chapter, which discusses Exaltation and Depression. If there is originality it consists in his doctrine of the opposing tendency of self-assertion and submission, and he damages this by dragging in speculations about each of these "instincts" having a specific hormone. The attempt to deal with agitation and fear in Depression adds nothing, and the fundamental characteristic "rapid volatile thinking, the so-called flight of ideas" is explained on the basis of speculations about psychic energy—certainly quite as exaggerated and fantastic in its over-complexity as are some of the psychoanalytic doctrines the author criticizes. The author, in case 43—who "sought and obtained interviews

with priests and distinguished theologians and professors" as a result of which he came to Dr. McDougall—expresses himself with regard to the malevolent effects of religions of authority upon the Nordic type. The work of Dr. L. Dooley, of Washington, has escaped our eminent author and critic of psychoanalysis—regrettable the more in that the oversight permits him to discover "that the root of the disorder is not to be found in any repression or in any dissociated system or memories" in contradistinction to dementia præcox, in which "repressions seem to play the leading rôle."

We come now to Chapter XXIII entitled Schizophrenia. Its omission from the book would have been fortunate. From carefully perusing it the reviewer concludes that Dr. McDougall has never dealt on anything but the most casual basis with a patient suffering these disorders. The case reports included are all quoted. They have suffered in the process. We find "judicious observations" which are also quoted. Several valuable statements, which occur in the text, seem also quoted, but without credit. We read of a patient who "Two years before the breakdown . . . . engaged in a prolonged flirtation, involving much 'petting,' with a married woman, Y, a friend of the family. This affair kept him under *constant sexual stimulation;* but his impulse was always inhibited by his *fear of consequences* and his sense of guilt. . . . . He was afraid to eat, afraid to urinate or defecate. . . . . He moved more with one particular attendant than with any of the others, because he knew him better and because this man was always very gentle with him. . . . . His mind was found to be still dominated by erotic ideas . . . . that he might lose control of himself and commit a sexual assault upon some woman." It seems unnecessary to criticize a case presentation including these statements. "The same forces drive some upward to success, while in others, who are unable to direct them into satisfactory channels, they are dammed up, find outlet in unhealthy ways, and so, instead of doing useful work, react upon the mind itself to distort and destroy it." "We might suppose that introversion is due to the action on the brain of some special hormone, and that the essence of the disorder is excess of such hormone in the blood." "It might . . . . be suggested that the schizophrenic patient is deficient or altogether lacking in what is commonly called self-feeling. . . . . But there are many facts which indicate that this is by no means true, ... I refer to facts of the order that have led Freud to describe Schizophrenia as one of the Narcissistic disorders." These few examples may indicate the depth of McDougall's penetration into the problem. Much of what is good in the chapter does not follow from anything which Dr. McDougall has written elsewhere in this book or in his earlier productions. Thus, we read: "Schizophrenia is a dream state, a prolonged half-waking dream or fantasy; . . . . ." Some of us have elaborated from clinical material notions which might be roughly expressed in such a proposition: one is to suppose that McDougall takes over the notion from Jung. "Yet, as the name Schizophrenia implies, the disorder is regarded as involving in some sense a splitting apart of the cerebral functions into two or more groups. And such division of functions may, it

is said, often be read upon the face of the patient, where one part, perhaps the upper half, displays one emotion, and another part (perhaps the lower half) displays some very different emotion": this minus its neuro-mythology sounds particularly familiar to the reviewer. While almost every statement in this chapter justifies criticism, brevity of space must restrict further quotation to the following: "The so-called negativism of the schizophrenic, is, I suggest, merely an extreme manifestation of such incapacity for decision or volition. . . . . A last peculiarity of the schizoid . . . . is his lack of humor." "I am suggesting that the schizophrenic state is essentially a morbidly exaggerated and prolonged state of sulking; and that the sudden outbreaks of violence which such patients are liable to, even those that seem utterly apathetic, are strictly comparable to the amok in which the sulking of the shy, sensitive, introverted Malay is apt to terminate."

The consideration of Epileptoid Seizures is another chapter which might well have been omitted.

The last of the book is devoted to consideration of the views of Freud as to the causation and treatment of mental disorders; to Dr. A. Adler's notions; to Jung's matter of Psychological Types; a 30-page chapter on Psychotherapeutic Methods and Mental Hygiene; a chapter each on Alternating, on Coexisting, and on Trance Personalities; and two chapters in which a theory of Personality and of its Disintegration, and the Integration and Disintegration of Consciousness, are considered. An attempt will be made to indicate the general character of these discussions. While there has seemed to be an effort on McDougall's part to be fairly just to the Freudian doctrines up to this point, it breaks down in these chapters and the old polemic style is well under way when he reaches his consideration of the theory of Homosexuality and the Œdipus Complex. His digest of the doctrines of the origin of sexual inversion as held by Freud adds nothing to the solution of the problem and terminates with the following: "Surely the two factors which he, in common with all others, recognizes are sufficient, namely, the organic factor and seduction!" One might even suppose that the use of the exclamation point was an instance of Freudian overcompensation on the part of the author. Dr. Tom Williams—one of the elect previously mentioned—is quoted twice in McDougall's refutation of the Œdipus Complex. As has been said elsewhere, both the Freudians and Dr. McDougall are rather vague and unilluminating in the handling of this topic. McDougall, in spite of his possibly dilettante connection with "the pagan tribes of Borneo" and his redoubtable "Introduction to Social Psychology" does not seem any more able to comprehend that he is dealing with a very important cultural situation than did Freud. Malinowski has presented facts in this connection; they are of much greater importance to psychiatrists than are recorded speculations. The author loses his dignity and fails to accomplish anything in his play with the psychoanalysts' dogma of ambivalence. One may be justified in concluding at this juncture that his irritation at competition in the dynamic field has involved him in so emotional an attitude toward Freud that he is wasting energies which might have

been applied constructively. We read for example "The essential and peculiar feature of the Freudian theory of therapy, ... is the doctrine of transference. It is true that the method of exploration by free association is chiefly due to Freud; *but* this may be regarded as now established beyond dispute as a valuable method of exploration." There follows what may be taken for an outline of Adler's theory, with a somewhat cavalier comment—"I suggest that Adler's theory might be expressed much more clearly, and given a proper place in a complete theory of the neuroses, if he would recognize the two fundamental instinctive tendencies which I have called self-assertion and submission, and described. . . . ." As to the classification of personalities, "the most successful hitherto is Dr. Jung's characterization of introverts and extroverts." The professor illustrates these poles of "a continuously graded series, ranging from extreme introversion to extreme extroversion; the majority falling in the middle region of the scale, but inclining in various degrees towards one or other extreme type" by "a comparative sketch of two young men well known to me . . . . brothers, differing in age by some two years only, who have never been separated for more than a few days on rare occasions, and who have enjoyed almost identical advantages, *the same* physical and social environments, *the same* training, *the same personal influences of every kind* . . . . close companions and have never been known to quarrel with one another. Yet they are very unlike . . . . I, the introvert, resembles the mother . . . . is shy; it is always something of an effort for him to go to a party, or join in a group . . . . likes long solitary rambles . . . . is completely indifferent to his clothes, so long as they do not bring upon him the attention of the public . . . . is less responsive to sensuous beauty . . . . looks upon his brother's enthusiasm in this direction with amused tolerance" etc. Jung's view is sketched, Kretschmer's "Physique and Character" is discussed, and a section is added in which a theory is propounded to account for "each subject's position in the intro-extrovert scale . . . . as mainly determined by some chemical influence." "The principal ground for taking this view is the fact that the subject's position in the scale can be markedly altered by drugs, notably by alcohol. The introvert who takes successive doses of alcohol is pushed by them towards the other end of the scale. . . . ." It is gratifying to note that McDougall finds that "the extrovert has a weak head." In this discussion there are some statements which serve to remind us that the author is eminent in the field of experimental psychology, for he reports a study which he has made on the influence of "intoxicating extroverting drugs on the one hand, the introverting or dream-producing drugs on the other" using geometric figures showing ambiguous or reversible perspective. The upshot of this consideration is: "We find that the brain of the extrovert is more liable to morbid dissociation than that of the introvert" which fits unbeautifully with his consideration of schizophrenia.

The chapter on Psychotherapeutic Methods may interest the novice; mostly polemics. Its terminal sections are Mental Hygiene, chiefly quotations; contains nothing new or particularly illuminating—Katharsis, which

is "a principle of mental hygiene rather than of mental therapy," and a consideration of Dr. McDougall's "belief" in psychoanalysis.

The last two chapters of the book return to the sort of writing which we encounter in "Part One," "The Outline of Psychology." It would almost seem as if these two chapters should provide introductory sections for a second edition of the book.

The professor's dealing with psychoanalysis throughout the book under review reminds one of the behavior of the dutiful father who remarks "This hurts me more than you." Undue preoccupation with the erroneous ways of Freud and uncritical inclusion of purely verbal propositions are the outstanding difficulties. There is a wealth of fact in the fairly large volume, for instance "The essence of the modern advance in the understanding of the neuroses [and psychoses] is the new insight gained into motivation, the demonstration that motivations . . . . are the all important factors in the genesis and cure of functional disorders." There is plenty of room in psychopathology for extensive studies of motivation in mental disorder. The fact that psychoanalysis is accepted by a certain number of psychiatrists does not justify McDougall in neglecting to produce a coherent system of psychopathology on the basis of his "Psychology of Purposive Strivings." Such efforts as he makes in this connection are rather lost amidst the critical writings. The introjection of neurologic speculations does not strengthen the text and certainly does not replace the experimentally determined facts which we might expect from this author.

Even as a critical review of modern contributions to the field, and as a prospectus of existing tendencies in psychopathology, the book is inadequate. An occasional footnote indicates that his acquaintance with his colleagues is wider than is the credit which he allots. Perhaps his multifarious interests and duties excuse this situation. If such be the case, one still might hope that he will consult with his colleagues at Harvard, Professor Campbell and Professor Mayo, with a view at least to the revision of the notion which runs through the first two-thirds of the book to the effect that there are "two main types of functional disorder" the "hysteric" and the "neurasthenic"; and to bringing these into consistent relation, for instance, with his rather vague theory of schizophrenia on the one hand and "extroverts and introverts" on the other.

A great encouragement comes to those working among the concrete problems of mental disorders in the under-staffed and over-crowded hospitals and clinics by the accession to the field of so preeminent a figure in American psychology as Dr. McDougall. If it were our good fortune that American psychology had solved its fundamental problems and the majority of its members held a consensus as to the points of departure for a systematic discussion of human behavior and thinking, then this step would be epoch making. To many of us the instinct psychology of McDougall, like the quantum theory of Planck, has solved many problems by erecting *one* greater one. What the referent of "purposive striving" may be is the great problem. It is the difficulty which the instinct matter provides in the fields

of rigorous thinking and experimental study that has led to the breaking away of so many psychologists from this sort of formulation. If the group of instincts can be envisaged as a group of manifestations of organisatory tendencies, then this use of terms can be made consistent with the sort of consideration to which we refer as psychobiology. When that has been accomplished we will not be occupied with the alternating activity of a self-assertive and a submissive instinct, but instead will grasp the sundry (probably individually simple) factors which make for an attempt at dominating or submitting to a situation as envisaged by the individual. The time seems to be passing in which we need argue as to priority in seizing upon the long established biological views in the affairs of mind. Greatly intensified consideration of the symbol activities making up the life-situation of individuals suffering mental disorder is the thing which is needed at this time. Unfortunate though it may be that one always has an explicit or unrealized theoretic warp in his approach to observation and investigation, and worthy though the object may be of pointing out the extravagances and inconsistencies of existing doctrines, Professor McDougall has still to satisfy his admirers by the production of a general psychopathologic theory susceptible to experimental verification, and a methodologically simple explanation of the facts of our general psychiatric experience.

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Experimental Psychology. By MARY COLLINS, Lecturer in Applied Psychology, University of Edinburgh, and JAMES DREVER, Director of the George Combe Psychological Laboratory, University of Edinburgh. (*New York: E. P. Dutton & Company, 1926.*)

A textbook of some 274 pages, four appendices, and a good index. A fairly comprehensive bibliography of each subject makes up Appendix D. A readable, rather compendious book, which presents with remarkable completeness both an outline of the methods used in experimentation and the results so far achieved. The book is in no sense a laboratory manual, but a thoroughly informative résumé such as might well be read with profit by those engaged in the consideration of abnormal mental states. The manner of exposition and terminology are such as to render the wealth of facts included available to an intelligent layman. Originally intended as a popular presentation, the book seems particularly well adapted to its final purpose—that of a first year's university course.

Following an introduction in which general experimental methods are simply but clearly presented there is a chapter each devoted to Vision, Hearing, Cutaneous Sensations, Sensations of Taste and Smell, and Sensations of Movement and other Organic Sensations. These chapters on the activities of the sensory receptors are supported by Appendix A, "The Psycho-organic System" in which the morphological aspect of the sense organs, the conducting system, and the more general features of the brain

are briefly outlined, and some comment is made on the effector apparatus. The five chapters are conspicuously free from gratuitous assumptions. There is enough of the history of research in each of the fields to provide background for grasping what is said of the subject.

Following this remarkably informative consideration of "sensation," there comes a chapter on Perception. A listing of the topics discussed may perhaps convey some notion of the ground covered in the book. "The psychology of perception was more or less central in that traditional psychology which was really metaphysics rather than positive science, which at least passed over into a theory of knowledge or epistemology in such a way that no one could say where psychology ended and epistemology began. . . . . In these modern theories of perception . . . . experimental psychology has had little share. . . . . Recently . . . . the Gestalt-psychologists . . . . initiated an experimental study of perception which bids fair to revolutionize the psychology of perception, and which has already placed in an entirely new light some of the results previously obtained. . . . . Much of the difficulty and controversy regarding perception has arisen because sensation has been looked upon as the most elementary mental process. . . . . Sensation is merely an aspect, never the whole, of experience. . . . ." In this connection attention is devoted to the evidence provided by optical illusions, including ambiguous figures, and the geometrical—(a) those of reversible perspective, (b) illusions of extent, and (c) illusions of direction. Synæsthesia is discussed, thereafter Number-forms. Space perception includes a discussion of the spatial threshold, a consideration of the perception of the third dimension—depth or distance. There is a section on the Localization of Sounds. Under "The Perception of Time," there is a consideration of the Sensory Present and of Rhythm.

Chapter VII is concerned with Attention; Chapter VIII, with the study of Action. In the last mentioned, there is considerable discussion of the three levels of integrative arcs in the central nervous system: "At the first or spinal level, the stimulation of the receptor evokes an immediate response from a corresponding effector or group of effectors. . . . . The second level is formed by the growth of branches from the sensory nerves of the arcs of the spinal level. The third level represents . . . . more intricate connecting paths . . . . formed between the arcs of the second level. . . . . The arcs of the first level are naturally the most fundamental and stable. . . . . The reflex arcs of the first and second levels are, in the main, congenital, while the arcs of the third level have to be built up in the course of the life-history of the individual. . . . . For practical purposes reflexes may be roughly divided into two classes, purely physiological reflexes, and conscious reflexes. . . . . The fact of an accompanying awareness involves a certain measure of control. . . . ." There follows a consideration of conditioned reflexes as a method of psychological experimentation, and remarks on reaction time. Sensorial, muscular, and "neutral" reactions are dealt with. Chapter IX discusses the nature of fatigue, muscular work, and methods of investigating fatigue.

Chapter X entitled "Suggestion and Suggestibility" is open to criticism in that the theory of ideomotor action seems to be accepted. It is to be doubted that such a statement as the following would receive a consensus on this side of the Atlantic: "Every thought of movement involves the beginnings of the actual movement, that is, the first muscular contractions in making the movement. . . . . The fact is, every idea we have, whether an idea of movement or not, involves movement of some kind. . . . . It is largely by means of this motor factor that we control the course of our own thought. . . . . One marked feature of suggestion is that, under its influence, opposing ideas are prevented from coming into the mind. In this respect the phenomena are continuous with those of ideomotor action." There is a brief discussion of hypnosis, a section on testing suggestibility, and a section on the "Aussage" experiment.

Chapter XI deals with feelings and emotion; it is not marred by the consideration of any special theories. The section on the emotions lists the characterization of the emotional state in such a fashion as to indicate a psychological rather than the James-Lange attitude. The sub-section on bodily effects of emotion refers to the admirable work of Cannon but again avoids rash generalization. There is a discussion of expression, of the psychogalvanic response, and a section on experimental æsthetics.

"Imagery and Association," "Learning and Memory," and "Imagination and the Higher Thought Processes" are the three next chapter-headings. They are uniformly good. It is a joy to read, "Attempts at physiological explanation and interpretation are very frequent in psychological works. It will generally be found that the physiological facts appealed to are not facts independently known by the physiologist, but merely physiological translations of the psychological facts to be explained."

Chapter XV deals with language and its development. It is not strange that so brief a consideration of a subject as important as linguistics should be imperfect. "Language also makes it possible for an individual to guide and control his own thought processes." The chapter carries sections on development of speech in the child, graphic language, and disorders of the language function. The discussion of experimental methods applied to speech and writing is fairly comprehensible.

Chapter XVI, "Mental Testing," 21 pages, contains a remarkable amount of data. While detailed description of the various tests are of necessity omitted, the chapter is readable and instructive. One is somewhat surprised at the limited notice awarded in the consideration of higher thought process and again in the writing on mental tests to the work of C. Spearman. Another omission is that of the work of Ogden in the field of linguistics. This latter is scarcely experimental, but the work of Spearman rests upon the most careful laboratory investigations.

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Animals Looking into the Future. By WILLIAM ALLISON KEPNER, Professor of Biology in the University of Virginia. (*New York: The Macmillan Co., 1925.*)

A most entertaining and informative book of 191 pages in which is presented a study of prescience which avoids dullness by the brevity of its details and yet amasses a very impressive argument against the mechanistic-materialistic formulations. A book, the reading of which will go far to divorce from their error those who have accepted the convenient and "understandable" notions which perhaps reached their greatest vogue in the attitude of Jacques Loeb. The book begins and ends with a consideration of man. The second chapter deals with social, and the third with solitary, insects looking into the future. There follow chapters on simple multicellular animals. Chapter VI is entitled "Types of Unicellular Animals," and Chapter VII deals with the manifestations of prescience in this division of zoology. Chapter VIII pertains to the material of animals' bodies. Chapter IX is entitled "Choice," and the book has a concluding summary. There is a good index.

Whether it be on the subject of the cultivation by ants of fields of fungi, or the skill of an amœba engulfing a spherical food-particle, Professor Kepner's discussion is as entertaining as it is convincing of his thesis. His statements are without the complexity which so often attends expositions of fundamental biological conceptions. On the other hand, so far as the reviewer's limited acquaintance with biology serves him, there are no overstatements of observational facts. In the latter connection it is particularly gratifying to find that restraint which comes from fully documented conviction.

If one must criticize this thoroughly successful book one must attend to one of its subordinate and perhaps wholly factitious purposes. The following sentence, which occurs on page 93, is the first to which the reviewer could attach objection: "And if there should be other than physical and chemical phenomena in life, there may be a basis for man's hope in personal immortality." Again on page 167 we read: "To me it seems, therefore, that the man who believes in the reality of his spirit is less a man of faith than he who believes in the reality of his body and the things of this world." In the summary, "the moral factor" receives emphasis which is disturbing only because our author is writing a book not for psychiatrists but rather for intelligent laymen. There is no special pleading: the vitalist conception which the facts indicate as a satisfactory explanation can be used as the sub-structure for ethical considerations, and the author has done very well in his task of providing an antidote to Fundamentalism.

It would be unfortunate if these comments gave the impression that this book dealt in a superficial fashion with its subject matter. The nature of the treatment may be indicated by the following excerpts: "Even in the matter of feeding the presence or absence of a contingency becomes a modifying factor in an unicellular animal's behavior. . . . . And this, despite

the fact that so recent as 1905 Loeb says . . . . 'As the "spontaneity" of living matter is in its simplest form . . . . apparently not different from the physical phenomenon of spreading, for this criterion the limits of divisibility of living matter coincide with the limits of purely physical phenomena.' The variability, and the qualitative and regulatory characteristics of the food-reactions of the *Amœba* and *Pelomyxa* cause me to feel that Loeb's coincidence is not so close as he would have us believe," or "Just as man displays foresight in attempting to capture an animal that is liable to escape; so, too, an *Amœba* . . . . displays a prescience, which is only approximated by the complex machines, behind which man's intelligence stands, and out of which intelligence these mechanisms have sprung. . . . . The simplest organism is more like man, because of its prescience, than is the most complex mechanism like the simplest organism." As a sample of the interesting matter and style, consider the following: "*Difflugia* is a shelled rhizopod that sometimes so suddenly retreats into its shell that the end of its retreating protoplasm is whipped off. If no further disturbance is met with, the lost fragment will travel toward the body from which it has been broken, while the parent cell will, in turn, travel toward it. In time the fragment and parent cell will meet and the two will coalesce with the result that the animal has been made whole again."

The treatment of Choice is stimulating; *e. g.*, "When we examine the reflex conduct of an incomplete organism or organ the suggestion of choice in the conduct becomes *nil.* . . . . By destroying certain neural centers of *Planaria albissima*, its proboscis . . . . [can be caused to] undergo autoamputation. The proboscis thus freed would swim about as an independent organism ingesting or swallowing every small object that it would encounter. But in this reflex conduct it displayed no choice. . . . . The proboscis would even turn upon the body of which it had formed an organized part and eat its way through from one side to the other (Fig. 69). When this organ is under the normal inhibitory control of the animal, as a whole, it displays a very evident faculty of choice in that it nicely chooses between food and nonfood." Perhaps a reading of the book will assist some of our more "advanced" colleagues to the happy state implied in the following: "It is not necessary to indicate to the lay reader that human beings acting intelligently can choose between two alternatives."

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An Introduction to the Mind in Health and Disease for Students and General Practitioners Interested in Mental Work. By T. WADDELOW SMITH, F. R. C. S. (Eng.), Deputy Medical Superintendent of the City Mental Hospital, Nottingham; Member of the Medico-Psychological Association (*New York: Wm. Wood and Co., 1925.*)

An amazing document which emphasizes its preface remark: "The study of mentation or the functioning of the brain cells from a scientific aspect, although intensely interesting, is still in its infancy and *many conclusions*

are drawn from what is still purely hypothetical, but in this work for the sake of clearness [save the mark] *many of these assumptions have been stated as if they were facts.*" (All italics herein are reviewer's.)

Alleging that "the biological conception of mentation has also been adopted" and advising all deep thinkers to read the valuable works of Jelliffe, White and Higier, the author plunges through 230 pages of stuff, facts and nonsense, the like of which would be hard to find. The book is not merely illogical, or academic, or erroneous, or superficial. It shows all these attributes, and more. It looks at first glance like a systematic outline, perhaps for the entirely uninformed, but both in terminology, grammar and content it requires thorough familiarity with its subject matter to make anything but hopeless error from its mixture of the superficial, absurd, correct, fantastic and novel. The book destroys the last vestige of the reviewer's faith in the dogma that one can express simply anything which he comprehends: the rule has no obverse; that is certain. Considered as a whole, this book represents the effort of its author to express some practical and reasonable views by a tropically exuberant growth of undigested, unarticulated, incoherent and contradictory fragments of ancient, modern and ultra-advanced speculation on the inter-relation of neurophysiology and mentation, together with heavy admixtures of current psychopathological hypothesis. He has no sort of conception of the organism as a whole, and—if we can call it a philosophy—his philosophy is an atomistic materialism. When such a world-view attempts the incorporation of the doctrines of psychoanalysis, not alone the orthodox but the more practical—such as those of Wm. A. White—the reader is in for it. It is useless to seek the most glaring inaccuracies and misinterpretations in the first or general part of the book. The best that can be said of it is that in it the author approaches at times a valid generalization. It is even possible that he is attempting under great handicaps to express an important one. The result, however, is quite futile.

Part II deals with special psychiatry. As might be expected, we find a queer mixture. "Consciousness is the expression of the energy of an intra-psychic conflict"—which would be excellent if *an* were substituted for *the*, and his notions of intra-psychic conflict were valid. "These reactions of the associative cells to nerve impulses are known as intra-psychic conflicts . . . .", page 36. "If there were no intra-psychic conflicts . . . . there would be no mind . . . .", page 89. "Personality or mind is a collector of unified complexes—due to intra-psychic conflicts—and therefore a consciousness of self, a feeling of a single self . . ."; "Multiple Personality . . . . a morbid form of self deception . . . ." and so forth.

In Chapter XXI "The General Treatment of Disorders of the Nervous System,"—the author's way of indicating that he is to write concerning psychiatric care—we find the results of actual institutional experience; *e. g.*, "if the patient is doing no real harm to himself or others, or threatening to do so, leave him alone, however eccentric his conduct may be." With the wheat, however, is plentiful chaff. Chapter XXII, "Paranoia and

Paranoid States . . . . Hereditary, due to abnormal inherent properties of the nerve cells, which makes it difficult or impossible for the individual normally to transfer his libido." "The infantile fixation is at the homosexual period of transference. The call of his unconscious mentation is always back to that period. His intellectual critique as it becomes developed up, is opposed to these trends . . . ." "Psychotherapy, although it cannot cure, will assist greatly in finding out" whether the patient should be committed! Chapter XXIII, Manic-Depressive Psychosis: "To understand the fluctuations of this psychosis, one must remember the ambivalency of ideas. . . . ." This is followed by much classification, abundant throughout the book and much more abundant than logical. This psychosis is to be differentiated "From Dementia Præcox by signs and symptoms of deterioration in the latter." Chapter XXIV deals with Neurasthenia, "the expression of a marked auto erotic or narcissistic fixation characterized by the crippling effects of the auto erotic introversion and manifested by a primary fatigue neurosis. Etiology, Predisposing cause. A narcissistic fixation of the transference of the libido due to abnormal inherent properties of the cell. . . . . These patients have apparently escaped the frank psychosis of Dementia Præcox, so common with the narcissistic fixation. The endocrine glands have responded, though inefficiently, to the stimulus of onanism. . . . . Diagnosis . . . . from Dementia Præcox by the age and the emotional tone. . . . . There are no somatic signs." In chapter XXV, Hysteria and War Neurosis, the former is discovered to be due to "repressed complexes acting upon a certain constitution of nerve cell." The next chapter deals with Compulsion Neurosis; XXVII, with Anxiety Neurosis—"This is a neurosis characterized by the failure of the individual properly to adjust his or her somatic and psychic sexuality," diagnosed "By the anxiety which is so typical"; and XXVIII, with Epilepsy. "In studying the epileptic constitution one sees constantly a mixture of egoistic *narcism* and the drive of the paranoia dominating the conduct, until the epileptic dementia sets in; also an emotional tone circulating round their home and parents. . . . ."

Chapter XXIX purports to deal with Dementia Præcox or Schizophrenia, "a group of psychoses . . . . having as the fundamental principle a splitting of the personality or psyche—the emotional tone from the intellectual faculty. . . . ." We are denied a "definition" of "deterioration." This chapter is bosh. Remarks about Involutional and about Senile Psychoses follow.

Chapter XXXII informs us concerning alcoholism, "A toxic psychosis due to alcohol." The next subject is Opium, Morphia, etc. Then comes the Infection and Exhaustion Psychoses, a chapter on Psychoses associated with Organic Disease and Injury to the Brain, and a chapter on "Mental Disease Due to Malformation of the Cells of the Nervous System,"—this is not a résumé of all psychiatry but deals with defectives.

The book ends with an index but this is preceded by Chapter XXXVII, "Anomalies of the Somatic Sexuality," mostly classification, and leaving

an aching void because a chapter on anomalies of the "Psychic Sexuality" is omitted.

A book, physically excellent, from which some people might be inflamed with curiosity as to what the facts of psychology and psychopathology may be. A book reflecting much reading and some institutional experience on the part of its author. From the less "elementary" portion, the impression comes that Dr. Smith could do a much better job if he had opportunity and occasion for synthesizing the matter he has in mind; and that, if he accomplishes this, he will approximate the tendencies evident in the current work of exponents of dynamic psychopathology, and in so doing perhaps contribute valuable generalizations.

HARRY STACK SULLIVAN,
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The Riddle of Society. A Contribution to the Understanding of Those Who Do Wrong. BY CHARLES PLATT, PH. D., M. D. (New York: *E. P. Dutton and Co., 1926.*)

A distinguished critic was once asked how he liked the novels of Hall Caine, the author of "The Manxman" and of many other very popular novels. He replied: "Clever, but fatiguing. The man always writes at the top of his voice."

After reading Dr. Platt's "Riddle," one confesses to much the same sense of exhaustion. There is a tenseness about his writing, a sort of thumping the cushions of the pulpit, a continual fervid appeal to the "Gentlemen of the Jury," that tires the reader prematurely, so that, at the end of a chapter or of "The Oration," he is unable to appreciate the sum of the whole matter. For The Riddle, that Dr. Platt, like the Sphinx, proposes, is really no Riddle at all to him. Like the Sphinx again, he knows the answer; indeed, he knows so many answers, and such varied ones, that the reader or the "Guesser" becomes so overwhelmed with all the answers that he soon has forgotten entirely what the Riddle was, and has even lost interest in the Sphinx.

But Dr. Platt is very much in earnest. He believes that he has something important to say, and he has taken pains to say it in the "Stop! Look! Listen!" manner, that compels, or that should compel attention. His publishers seem to be of the same mind. For the "Riddle" has been most extensively advertised. Every physician, every social-worker, perhaps every lawyer, received a descriptive circular. Some of us, who, like the Reviewer, have a double personality, a medical personality and a social-service one, received two circulars. So, both author and publisher have a keen sense of "Message." It would be unkind and discourteous not to listen, even if one does nod occasionally. Yet the Orator is so intensely in earnest, that one's wandering mind is abruptly recalled to attention by some violent thump on the edge of the pulpit, making one feel that one must somehow have just missed a most important point in the argument. So, one turns back

four or five pages in The Riddle, re-reads these pages (over which one has sinfully nodded), and wonders where the important point was.

More interesting, however, than any riddle, or any book about any riddle, is the personality of the writer, the asker of the riddle, the Sphinx itself. And one gets side-lights on Dr. Platt's individuality, not so much from his book itself, as from the quotations, the citations at the heads of chapters, which, taken together, form a sort of Anthology of the writer's Favorite Authors. Carlyle and Robert Browning are apparently his chief divinities, with Dickens pressing them close. To analyse the writer's style, and tricks of expression according to his admiration for these Great Three, is almost as stimulating a task as the reading of his book itself.

To one who has spent some fifteen years of more or less constant contact with "Those Who Do Wrong," books like "The Riddle" are always welcome. One reads and has read so many of them. Yet one can count on one's five fingers those that have been of real objective help. And those, from which one can still quote with gratitude, are fewer still. Indeed, those of us who deal intimately with delinquents, do not as a rule learn much from books anyway. We learn more, sometimes, from a single human life, perhaps from a single human act or spoken word than from the output of a whole "Faculty" of our so-called "Social Economics."

Evidently, one of Dr. Platt's favorite chapters is the chapter on Puberty. The dominating interest of some minds in adolescence must impress any psychoanalytically-inclined psychiatrist. Prof. G. Stanley Hall was a case in point. The author of "The Riddle" is another. It is perhaps significant that one of Dr. Platt's "Chapter Mottoes" is taken from the work of Lewis Carroll, whose interest in that period of girlhood, covering "the years immediately preceding the more evident changes" (*i. e.*, changes of preadolescence) (*cf.* The Riddle, p. 81, note) was responsible for "Alice in Wonderland." But the chapter on "Puberty," written at the very top of Dr. Platt's voice, is well worth reading. One cannot accept his attitude (p. (89-90) on "sex perversion." So-called "perversions" are not all determined by some emotionally-tinged experience of childhood. If "a too-loving mother, too much fervid kissing, too much intimacy, may prepare the child for a life-time of shame," then, the sooner that we can get rid of such a concept of "shame," the better for society, and the final answering of Dr. Platt's "Riddle."

The chapter on "The Thief" is most excellent. So is the chapter entitled "The Law." The latter contains nothing startlingly new; but it is a good presentation of our present difficulties. When dealing with "Prison and Punishment," one is sorry to see Dr. Platt citing so flamboyant and so emotional a production as Fishman's "Crucibles of Crime." Maryland is, indeed, a small state, but it would have helped to balance Dr. Platt's judgment about jails, if he could have glanced through the report on Maryland jails, made to the Commissioner of Public Welfare by Mr. Howard C. Hill, for 1925. Jails are not pleasant places anywhere, but

words like "filth, degradation, demoralization of body and soul" overstate the case, and do not help at all.

In conclusion, one wants to point out some of the really excellent things in this book. There are many of them. But four examples must suffice here.

"We have come to a realization of the potency of the mental processes, of their influence on health. We know now the drag and the poison of hate and of fear. We know how a sense of inferiority may destroy a man." (P. 227.)

"Health, mental and physical, should be the first consideration in education. A man thinks with his whole body, not with his head alone." (P. 242.)

"The bad boy is often the boy most worth caring for. An 'incorrigible' child is often a child of unusual vigor, a child with high potentialities." (P. 246.)

"We find many foreign names on our criminal records, but we find among our criminals only relatively few who are of foreign birth. These "foreign" criminals of ours are of the second generation; they did not become criminals until after they had enjoyed the advantage of our schools." (P. 263.)

These quotations ought to make many of us anxious, and willing to read the whole book. Or if not the whole of it, at least the chapter on "The Law," and that on "Educating for the Social Life." You may often not see eye to eye with Dr. Platt. He may even annoy and irritate you. But this is a healthy reaction. It may result in the counter-irritation of a little individual thinking of your own.

JOHN RATHBONE OLIVER.

In Memoriam.

CHARLES B. DUNLAP, A. B., A. M., M. D.

Dr. Charles B. Dunlap, Chief Associate in Neuropathology at the New York State Psychiatric Institute and Professor of Neuropathology at University and Bellevue Hospital Medical College, died at his home in Scarsdale, N. Y., on June 6, 1926. Although it was known that Dr. Dunlap had not been in good health for some time, it was not believed that his condition was serious. In fact, he was in his laboratory on Saturday at work as usual, but on Sunday morning he was seized with an anginal attack and passed away shortly after noon on that day.

Dr. Dunlap was born in Cambridge, Mass., August 24, 1863. His boyhood was spent in West Virginia, which had been the home of his family for many years. He returned to Cambridge to complete his education in the high schools and later entered Harvard College, where he was graduated in 1889 with high honors, receiving both a Bachelor and a Master degree in Arts. He then began the study of medicine in the Harvard Medical School and received his M. D. in 1893. This was followed by an internship in the Boston City Hospital, following which he was appointed First Medical House Officer and in this capacity served several years. Upon finishing his general hospital experience, Dr. Dunlap began his training in neuropathology at the McLean Hospital laboratory, where he worked with the late Dr. August Hoch. In 1899 he was appointed by Dr. Meyer as Assistant in Neuropathology at the Worcester State Hospital, and when Dr. Meyer came to Ward's Island in 1902, he invited Dr. Dunlap to take the position of Chief Associate in Neuropathology. In addition to his work at the Institute, Dr. Dunlap subsequently became Instructor and finally Professor in Neuropathology in the University and Bellevue Hospital Medical College. He was a member of the New York Neurological Society and The American Psychiatric Association.

Dr. Dunlap's scientific contributions covered many important problems in the field of neuropathology. He was among the first in this country to take up and confirm the important observations of Nissl and Alzheimer on syphilis of the central nervous system, on cerebral arteriosclerosis, and on senile brain atrophy. An important paper entitled "The Anatomical Borderline Between the So-called Syphilitic and Metasyphilitic Disorders of the Brain and Spinal Cord" was read at the opening of the Henry Phipps Psychiatric Clinic, and published in the AMERICAN JOURNAL OF INSANITY, Vol. 69, No. 5, 1913. Another paper on this subject entitled "The Pathology of General Paralysis" was published in the AMERICAN JOURNAL OF INSANITY, October, 1914. Following the appearance of the epidemic of encephalitis in 1918, Dr. Dunlap devoted considerable time to the study of this disease and contributed a paper entitled "Brain Changes in Lethargic Encephalitis," published in the State Hospital Quarterly for May, 1921.

For a number of years Dr. Dunlap spent a great deal of time on the pathology of Huntington's chorea and made a number of preliminary communications on this subject. It is planned to publish at an early date a valuable manuscript which he left, dealing with this subject.

Dr. Dunlap was for many years interested in the subject of the brain changes in dementia præcox. While he did not deny the probability of a definite anatomical foundation for this type of mental disorder, he was not able to confirm the findings of others who claimed to have discovered characteristic lesions in the brain in cases of dementia præcox. Dr. Dunlap showed that the reported changes could not be considered typical or specific for dementia præcox. His last paper on this subject, entitled "Brain Changes in Schizophrenia," was read at the meeting of The Association for Research in Nervous and Mental Disease, December, 1925.

Dr. Dunlap was an outstanding figure in neuropathology in this country. His contributions, conclusions and opinions were highly valued and always respected. He was a most careful and conscientious worker, and he always subjected his own formulations and conclusions to an even more critical analysis than he did the work of others. He possessed qualities of intellect and tempera-

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ment which stamped him as a true scientist. His students and colleagues always found him kind, sympathetic and generous. He gave to them freely of his time, and no effort was too great for him to make on behalf of anyone interested in a scientific problem. He was a man of simple tastes, who disliked display and ostentation in any form. His students and associates recognized in him a teacher and investigator of unusual ability, one whose sincerity and devotion to duty and high scientific ideals were a constant stimulus and inspiraton to all who came under his influence.

PETER MacNAUGHTON, M. D.

Dr. Peter MacNaughton, Superintendent of the Ontario Hospital, Brockville, Ontario, died at his residence on the 9th day of March, 1926, of pneumonia, following an attack of acute inflammatory rheumatism of a month's duration.

Born on March 13, 1859, in the township of Peterborough, Ontario, his education was received in the schools of the district, the Norwood High School and Trinity University, Toronto, from which he graduated in medicine in May, 1888.

For 12 years he successfully practiced his profession at Westwood, Ontario, and then entered the service of the government, being appointed Junior Physician at the Brockville Hospital, and subsequently spent several years at London, Mimico and Hamilton, where he was Assistant Superintendent from May, 1911, to August, 1920. He was then promoted to the position of Superintendent of the hospital at Cobourg, and in November, 1923, was transferred to Brockville.

Dr. MacNaughton was Vice-President of The Ontario Neuro-Psychiatric Association and a member of The American Psychiatric Association, and always was an interested attendant upon the meetings of the local medical societies where he happened to be residing. He was also an enthusiastic sportsman and was President of The Eastern Ontario Curling Association and The St. Lawrence District Lawn Bowling Association. The Doctor was a thirty-second degree member of the Masonic Order and likewise a member of the Sons of Scotland and the Brockville Club.

In 1892 he married Janet Helen, daughter of the late Thomas Blezard, of Westwood, member of the Legislative Assembly for East Peterboro, who survives him.

His remains were laid at rest in the Peterboro Cemetery.

Dr. MacNaughton was much beloved by his staff and patients, and was an able and conscientious administrator.

W. M. E.